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USEFUL HINTS

FOR THE

BUSY DENTIST.

BY

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AUTHOR'S NOTE.

IN this volume, I have endeavored to carry out the same principle embodied in my first work; namely, to present to the busy, practical dentist, the latest and best methods of our most skilled operators, and best writers, arranged in such a manner as to be accessible at a moment's notice.

This volume contains much more original matter than the first; illustrations have been employed, which will add greatly to the value of the work as a book of ready reference.

In offering this second little volume to the profession, I have many acknowledgments to make for the generous and friendly reception given to the first; and it is hoped this effort will prove as acceptable, and meet with the same indulgent welcome.

WILLIAM H. STEELE.

FOREST CITY, IOWA.

DEPARTMENT A.

USEFUL HINTS.

DEPARTMENT A.

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1. **Health in the Office.***—Since health is the cornerstone of all good work, either of body or mind, we venture on a few suggestions as to how this may be secured in our office surroundings.

Pure, fresh air is of prime importance to health, yet how little value seems to be attached to it, if we may judge from the close unhealthy atmosphere of many of our dental operating-rooms, charged with the concentrated emanations from iodoform, creosote, and half a dozen more ill-smelling compounds, and mixed with the perfumes of dead pulps and foul teeth. Though the operator may exist in these improper surroundings for a long time, yet nature, insulted by such treatment, finally rebels, and protests in the form of headaches, backaches, weakened eyes, and the like.

To secure a healthy office we must have good light and good ventilation.

In regard to light, north, south, and east each has its advantages and disadvantages.

The north is a clear, steady light, but is not strong; and in the short winter months and cloudy weather its defects are clearly seen and felt.

The east is a good morning light, but is weakest in the closing hours of the day, just when one is tired and wants the best light possible.

A south light is the strongest and longest, and if properly regulated by white curtains in the middle of the day, the best.

A west light should never be chosen if either of the others can be had, as it will be weak in the morning and bad

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* Read at the semi-annual meeting of the Massachusetts State Dental Society.

in the afternoon, even if you are protected from the direct rays by a necessary curtain.

The dental operating-room should not be a small one, or a box partitioned off from an ordinary room, without apparent thought of air or ventilation. This condition of affairs is often seen in our large cities, sometimes several of these "stalls" being found in one end of a room. On the contrary, the operating-room should be of good size and separate from the parlor or anteroom. The laboratory should be a commodious, light sunny room, not the little back pantry-closet or dark, damp cellar often seen.

Sun and air must be had if either good health or good work is expected.

Then, have all medicines in glass-stoppered bottles, in a case, so as to keep the office as free as possible from disagreeable odors.

It is not at all necessary to have one's office, instruments, or person so saturated with creosote and iodoform as to advertise one's calling. This is neither gentlemanly nor agreeable. No professional man is so likely to neglect proper exercise as the dentist, with his tired back calling him to the lounge or easy chair; but air and exercise must be had, either by riding, driving, or walking. To this end it is well to have the office separate from the dwelling, so that in walking back and forth the eye may be allowed to take in fresh scenes and the lungs fresh air, thus refreshing both mind and body.—H. B. Noble, D.D.S.

2. **Separating Teeth.**—I think the separator is a dangerous instrument. It is in rare cases only, where good and sufficient space may be thus acquired, and in unskilful hands, especially young practitioners, the probability of failure at the cervical border is, in my opinion, increased tenfold. If a tooth is to be filled, the first and most important point is that the completed filling shall be perfect. There are few men who can put in as good a filling in a space barely admitting an instrument, and there are fewer still conscientious enough to do it, even granting them the skill.

The best teaching then for the young, and I think for the old as well, is to depend on the rubber or wooden wedge. There is a trick in the application of each. When using rubber allow a bit of it to protrude below the cutting ends of the teeth. This part, by contraction as the teeth move, will swell, and the rubber is prevented from pressing up against the gum. To apply the wooden wedge, proceed thus: The wedge is trimmed to the proper width and should approach a taper very gradually. If it is then made smooth with a bit of sandpaper it will be less likely to split. Lastly, it should be soaped. A second wedge should be made quite thin, and have a shoulder which will prevent it from passing between the teeth beyond that point. This, also soaped, is placed between the teeth next to the gum temporarily. Now, when the permanent wedge is forced into position, this one, first placed, prevents it from hurting the gum, and offers a slippery surface for it to slide against. The wedge in place and trimmed to suit, the temporary slip is removed, and this relief of pressure against the gum is gratefully acknowledged by the patient. At the next sitting, supposing the teeth separated but quite sore, gutta-percha should be put between them and worn for several days.—Dr. Ottolengui, in Brooklyn Dental Society.

3. **Application of Rubber-dam.**—Probably no dentist will admit that he is not master of so simple a thing as the rubber-dam; and yet how often does the dam become the master of the dentist merely because some unforeseen accident occurs in the midst of an operation. There is the tiniest tear through which mucus will ooze; the dam did not pass entirely down between the teeth, and moisture is creeping toward our work; the clamp slips; we have not allowed quite enough margin to the rubber to cover the mouth; we thought we had, but when we applied the clamp we discovered our error, and so on *ad infinitum;* through some little oversight we have failed in that seemingly simple operation, the application of the dam. So much annoyance has occurred in this manner that perhaps you will pardon me if I think it

important enough to tell you all the little tricks which I have learned in this connection.

For comfortable work, the rubber, when in position, should embrace at least four teeth; on dark days it is not amiss to take in twice as many. It should lay over the face without a wrinkle, and should not cover the nostrils; it should, however, completely cover a moustache, as the hairs often intervene between our eyes and work. To accomplish this, a piece of dam of sufficient size should be stretched over the parts which it is intended to cover, so that the proper position for the holes may be ascertained, allowance being made for the stretching which will be made by the clamp. In this position the cusps of the teeth will show through the rubber, and a mark over each may be best made with an excavator, a pencil not answering as well. If because of the loss of a tooth a space must be spanned, the rubber should not be stretched at that point; if this is not considered it will be found that when the dam is stretched over the teeth it will not hug the necks of the teeth at this point. In fact, this rule holds for all spaces great or small; the rubber should be wide enough. In cutting the holes use a device which makes a perfectly round hole, this being the least likely to tear. Make the holes sufficiently large; don't force a molar through a hole which would be just right for a bicuspid. Where the teeth are in close contact, soap a bit of waxed floss silk and pass it between all the teeth first; then soap the edges of the holes in the dam; in this manner there is seldom any difficulty about forcing the rubber between the teeth. Occasionally, even this will not serve. Your predecessor has left a filling with ragged edges, which tear the rubber. In this case the teeth in question should be wedged with soaped wood, as will be described later. The least spreading allows the rubber to pass between, when the wedges may be removed. This is better than trying to force the dam between the teeth with silk. That method not unfrequently tears the rubber, and accounts for the mysterious oozing which occurs whilst the filling is in progress, and is largely responsible for the failure so often reported at

the cervical border. If the dam has been properly adjusted, it can be removed in perfect condition. How often have you noticed, after removal, that in addition to the holes made by your punch there are several others, satellites, as it were, about the greater orbs.—B. A. R. Ottolengui, D.D.S., in Brooklyn Dental Society.

4. **Applying Rubber-dam Clamps.**—Select the one to be used before applying the dam. Choose one which will grip the teeth tightly. Throw away all clamps which would not hurt you if put on your finger. A clamp without a spring is no better than a clock in the same condition. In applying the clamp to a molar in the upper jaw a little trick is found to be most valuable. We begin by slipping the rubber over a central incisor, then over the lateral cuspid and bicuspid, and finally over the first molar, let us say. We endeavor to apply the clamp and find little room, and the patient flinches. The cause is this: The middle finger is the one we use to adjust the dam; it protrudes into the mouth, and as we work toward the molar region we gradually fold the angle of the mouth inward so that at last it is held back by the tip of the finger, and it is difficult to find room for the clamp.

Just at this point, take the handle of a burnisher or other instrument and free the cheek, so that the finger passes into the mouth, the cheek slipping forward; then it will be found that, not being crowded back, its elasticity gives us sufficient room to apply the clamp without pain. This one point has been of inestimable value to me, and to my patients in saving pain.

Where the gum has receded and a large festooned cavity is present, the space on either side of the hole which is to embrace the tooth to be filled should be wider than ordinarily made; otherwise, when stretched so far up on the gum, there will be leaking about the edges.—B. A. R. Ottolengui, D.D.S., in Brooklyn Dental Society.

5. **Ligation of Rubber-dam.**—Ligatures should be dispensed with as much as possible. They are frequently the

cause of more pain than any other part of an operation. It is rarely necessary to ligate more than two teeth, and frequently no ligature at all is needed. The trick is done by inverting the edge of the rubber so that it slips under the margin of the gum; if the root is at all conical, the elasticity will cause the rubber to crawl up and tuck itself under nicely. If a ligature must be used, a little cocaine is useful. There will come to us cases where the ligature is absolutely necessary, and where it seems almost impossible to place it so that it will not ride up around the crown rather than remain at the gum margin. Let us suppose such a case in connection with an upper lateral incisor. The cavity is in the palatal sulcus, therefore the ligature must be forced up. The trick is to tie a good knot in your silk first; placed about the tooth, this knot must come at the center on the palatal side; it makes a good point of resistance for the instrument, and is pressed up under the margin of the gum, carrying the rubber with it; the gum contracting holds it, and when tightly tied on the labial side holds securely. This is the first point I ever picked up at a clinic, and, as I have never seen it at one since, I would have lost a great deal of satisfaction which it has brought me had I been absent from that clinic.

I alluded to leaking. In a very wet mouth, after the best precautions, ligatures well placed, it will sometimes happen that moisture will creep in around the neck of the tooth. Take a piece of spunk, dip it in gum sandarach, being careful not to get an excess, and pack it in a rope around the neck of the offender. Then apply a second ligature which shall tie the spunk in place. The leak will be stopped. If an instrument has slipped and torn a small hole, it may be stopped with a bit of sponge dipped in sandarach. Where the leak is about a clamp, the clamp should be taken off carefully, a fairly large piece of spunk, treated as described, placed along the edge of the rubber, and the clamp reapplied so that it bites the middle of the spunk holding it in place. As to the slipping of a clamp, it sometimes occurs because the dam is held too tight by the rubber strap which

passes around the head, or there is a strain from the dam weights.—B. A. R. Ottolengui, D.D.S., in Brooklyn Dental Society.

6. **Napkins for Excluding Moisture.**—In some cases it will be found impossible to apply the dăm at all. There is a way of using the napkin which may not have occurred to all. A small mouth napkin is rolled into a narrow fold, and placed about the tooth in the shape of the letter "U," the ends forward. It is so arranged that the folds extend slightly upon the sides of the tooth, where it is firmly held in place with a clamp. There is a special clamp made for this purpose by Dr. Ivory, but any clamp of suitable form will answer.—B. A. R. Ottolengui, D.D.S., in Brooklyn Dental Society.

7. **To Quiet Nervous Patients.**—In casting about for means to effectually and safely quiet the disagreeable nervousness of many patients, without taking up so much time, I began to try nitrous oxid gas. After having used it more or less for about four years, I have adopted the following method: After having opened cavity with chisel, get instruments I wish to use all ready, dry cavity with an absorbent, administer from three to six inhalations of gas; this, as you know, is a very small dose or almost no dose at all, yet it is sufficient to have a very quieting and delightful effect upon the nervous system. The patient does not lose consciousness, but seems to lose that nervous dread or apprehension so often described by saying that the tooth felt as if the instrument was going clear through to the pulp. When asked if they felt any pain, the patient will usually say no; or perhaps it may be as a lady said to me a few days since, when I inquired if she felt any pain, she replied, "Yes, a little, but I felt so calm and restful that I did not mind it in the least."

The gas should not be given in sufficient quantities to produce anæsthesia, but simply enter the first stage, called by Professor Guilford, the exhilarating system. Two admin-

istrations as described will enable the operator to prepare the sensitive portion of an ordinary cavity. Many people refuse to take it, being afraid of the gas. I never insist on it except in the case of very nervous persons. If there be any danger in the use of nitrous oxid gas as here proposed, I have been unable to find either from the history of the anæsthetic or from practice; if there is any let us hope it may be made apparent in the discussion of the demerits of this rather disconnected and incomplete paper.—Dr. W. H. Dwinelle, *in Cosmos.*

8. **Mixing Cements.**—Many times in using oxyphosphate there was difficulty in letting go the patient's mouth to mix the filling. He had found such a contrivance as he now showed very useful in overcoming the difficulty. It consisted of a glass bottle with a large mouth, the stopper of which consisted of a glass bulb and tube, the powder being in the bulb of the stopper instead of in the bottle, and the bulb being open at the top and covered over with India-rubber, so that by pressure of the rubber the desired quantity of powder was forced through the tube. A similar arrangement contained the liquid, so that the whole operation of mixing the phosphate could be easily conducted with one hand.—Dr. Humby, *in British Journal.*

9. **To Prevent a Slip in Dental Operations.**—1st. Almost always the rubber-dam should be applied before operations are begun. There are exceptions where the difficulty of its application, and the pressure of clamps on the gum, more than balance the benefits to be derived from its use, when it should be discarded.

2d. It is essential that the head of the patient be steadily supported. He will be less likely to move his head, voluntarily or involuntarily, if his position be made fairly easy and comfortable.

3d. The position and height of the chair should be adjusted to the easiest and freest movement on the part of the operator. The "arm" is a necessary adjunct to the chair,

that one forearm and the hand may be firmly supported while steadying the head or lower jaw of the patient. With these precautions, the possibilities of a "slip" are greatly reduced.

4th. For the engine, a poor hand-piece, one which fails to grasp and hold the bit firmly, should not be tolerated.

5th. All cutting instruments should be sharp—they can be used more accurately, delicately and speedily.

6th. The operator, while he may work rapidly, should never be in haste, but rather deliberate; making sure, especially, that each instrument he selects be adapted to the work in hand. Of all things, he should avoid the habit of jerkiness or fussiness in the handling of tools.—Dr. G. Newkirk, *in Review.*

10. **Pericemental Inflammation.**—The peridental membrane being so abundantly supplied with vitality is frequently subject to inflammation, and I know of no disease presented to the dental practitioner that is so annoying and perplexing as the one under consideration.

The peridental membrane is an elastic, velvet-like cushion, entirely lining the alveolar cavity of each root of the tooth. It has just enough of elasticity to allow the tooth a slight movement in any direction, when it resumes its normal position as the pressure is removed. This peculiar membrane is supplied with blood-vessels and nerves, as is the pulp of the tooth at the apical foramen just before entering the pulp canal, these vessels separate, and a branch continues along the side of each root, or fang, of the tooth, supplying the pericemental membrane. By the aid of this membrane we are enabled to distinguish the touch of the tooth, and Professor Black says, "This is the only organ of touch possessed by the tooth, and this is so delicate that the least pressure of the tongue conveys the sensation to the tooth." By means of this delicate membrane we are enabled to distinguish this disease (pericementitis) from pulpitis and other diseases of the tooth that come to our notice—percussion producing pain and flinching, which is not the case in pulpitis.

Inflammation of the peridental membrane is ushered in and distinguished by redness of the gums, heat, pain and tumefaction or swelling. In diseases of this membrane we are in a measure confined to local applications to the gums—after removing the cause of disturbance, and here let me state that all inflammations are caused by an irritant in pericementitis, the irritant may be a putrescent pulp—may be from a blow, or some irritant around the gingival border of the alveolus-salivary calculus, for instance; and I have seen considerable inflammation of the membrane by the overlapping of an amalgam filling—probably inserted by myself—impinging on the peridental membrane at the neck of the tooth. Now, before any therapeutic treatment will avail much, the cause of the irritation must be removed.

The treatment most relied on for pericementitis has been counter-irritation and stimulating the absorbents. Aconit and iodin have been largely depended on for this purpose, and I have always used the aconit and chloroform as a local application applied by means of a napkin, at frequent intervals, followed by painting the gums with iodin; the iodin seems to be more readily absorbed and carried to the place where most needed, when the chloroform and aconit is first used; aconit paralyzes the sensory nerves, arterial tension is lessened, the inflammatory process being thus held in check until resolution ensues. Iodin acts also as a counter-irritant, and excites the absorbents, thus whipping up these little scavengers, enabling them to carry off any effete matter accumulating in any local part of the body and diffusing it through the system; it has been extensively used in inflammation of the peridental membrane and of the gum tissue.

But it may be inquired, "How are these external remedies brought to bear upon deep-seated and internal inflammations?" I answer that the beneficent author of our existence formed us so that there exists an intimate relation, a close sympathy between internal parts and the external surface immediately opposite or over them, and physicians have all along availed themselves of its advantages in treatment of internal or deep-seated diseases. This treatment, to be

effective, may have to be repeated for several days to secure control of the conditions. In my own practice I have found, in addition to the local applications, great benefit in administering aconit in one to two-drop doses, every hour, for six or eight hours; or in the use of gelseminum in five-drop doses. These are great depressors of the heart's action, and should not be administered by ignorant or careless practitioners.—Dr. W. H. Sedgwick, *in Dental Register.*

11. **Protecting Teeth While Erupting.**—For many years it has been my habit with soft teeth, that are just erupting to wash out the fissures and put a pat of oxyphosphate in them, even if they are not softened at all. If they are dried out, the filling will usually stay, even if no cutting has to be done. This serves as a protection while the gums lie over the ends of the teeth, and while they are still unused in mastication. When the tooth gets well through, and is antagonized and used, the danger of softening of fissure is greatly lessened. When the upper molars are through, they are treated in the same way.—Dr. Perry, *Ohio Dent. Jour.*

12. **Pyorrhea Alveolaris and its Treatment.**—What is it? No one knows definitely, but it is a disease of frequent occurrence, and when advanced to the stage of pus discharge requires speedy and heroic treatment. A cure can be effected in a large majority of cases when the disease has not advanced so far as to cause the teeth to be loose in their sockets. The first step in treating a case well advanced, is to test well the condition of the alveola support of the teeth. As a rule, it is a good practice to advise patients to have all teeth extracted that have lost two-thirds of their alveolar support; as not one time in twenty can a tooth be retained with satisfaction, if as much as two-thirds of the process has been destroyed by the disease. The next step in treatment (and very important) is to remove from the teeth all accessible deposits, when deposits are so located on roots of teeth as not to be reached and dislodged with scalers; the tooth or teeth containing such should be extracted; a cure cannot be effected so long

as deposits (however small in quantity) remain on roots of teeth. To remove deposits successfully and without detriment to surface of cementum with ultimate injury to gum tissues, and to make a cure possible and sure, smooth edge scalers must be used. Success in treatment of the disease depends very much upon the style of scalers used, and how used; the chief consideration, the thorough removal of all deposits possible to be reached; after which, the application of sulphuric acid (dilute) to suit respective cases. In old subjects, with disease far advanced, one of acid to six, eight, or ten of water is not too strong; with younger persons, and disease not advanced to medium stage, one of acid to fifteen, twenty, or thirty of water is suitable strength. The acid is always beneficial and never injurious.

The patient can now take charge and conduct treatment until a normal state of the gums is restored, which ordinarily can be accomplished to satisfaction in a week or a fortnight, according to extent of disease, age of patient, prosecution of manipulative treatment as advised; free use of tooth-brush, tooth-pick (quill), and finger pressure on gums after meals, daily for a week or two, or until cure is definite.

When a cure has been accomplished and treatment discontinued, patient must be instructed to use tooth-brush and pick systematically, and with regularity, after meals. It is a cleanly, wholesome practice, and should be regarded an agreeable privilege, and if freely indulged will prove a safeguard against return of the disease in a very large majority of cases.

My experience justifies the assertion that the disease is curable, and it can be easily cured when treated as above indicated and instructions to patients are respected and faithfully practiced.

The disease is well-defined and easy to diagnose, no need mistaking it for any other disease. There has been much speculative theory on the subject of cause, but so far nothing definite is known. The disease always commences at the margin of the gum, and gradually advances toward the alveolar process; if treated early, cure is speedy and permanent.

If not treated and checked, the advance is to the apex of the roots of the teeth involved (sometimes slow and sometimes rapid), causing loss of the teeth; then the disease abates, and the soft tissues assume a normal state.

The disease dates far back, and very probably has never changed type. The idea that splinters from tooth-picks or other foreign substances imbedded in the gum tissue can and do produce the disease (as some contend) is too absurd to be entertained. Less theory as to cause of the disease and more conservative treatment for cure would be best for suffering patients.

In the treatment of pyorrhea, as in most diseases pertaining to the dental structure, but few remedies are requisite. With less than a dozen well selected remedies successful practice can be conducted, and with them all can be accomplished for the check and cure of disease possible or deservable.

Our safest and best teacher and guide in practice is experience and careful observation of results. Pyorrhea alveolaris is a curable disease.—B. F. Arrington, D. D. S.

13. **Inflammation After Extraction.** With exostosis, and large and divergent roots, the force necessary for their removal is sometimes equal to all the strength the operator can bring to bear, and it is unreasonable to suppose that this amount of strain can be applied without some inflammation following. Here is where the systemic condition of the patient must be considered. There are many so constituted that any wound heals readily by first intention. If no broken or displaced process has been allowed to remain to cause irritation, the place will soon heal, and will be materially aided by the use of antiseptic and astringent lotions. But in a great number of people local disturbance so severe as the extraction of a tooth of this kind is sure to be followed by an exhibition of the inflammatory process, more or less serious, according to the severity of the operation and the systemic condition of the patient.—Dr. Thomas, *Ohio Den. Jour.*

14. **Silk for Squeezing Mercury from Amalgam.**—Dr. C. E. Kells uses China silk in which to squeeze out mercury from amalgam. It leaves no fibers adhering to the material, as from the use of chamois skin.—*Ohio Journal.*

15. **Gold-capped Cement Fillings.**— * * * I prepare beforehand a piece of gold of the size and proximate shape of the opening of the cavity, by condensing a few cohesive cylinders on a serrated steel plate. I then fill two-thirds of the cavity with an oxyphosphate cement, place the prepared piece of gold on the cement while it is yet soft, and finish the filling by putting on more cohesive gold, until the desired fullness is arrived at. I claim to have good results with these fillings and to save a great deal of labor.—Dr. Oltramore, *Swiss Odontological Society.*

16. **Useful Right Angle Points.**—A very serviceable addition to right angle points of the engine is a number of small screw-pointed mandrels mounted with the smaller wheels and cones. In grinding to fit bands these mounts will enable the operator to turn many an angle with ease that otherwise would be an affliction to the patient and himself.—Dr. F. E. Battershell, *Ohio Den. Jour.*

17. **Necrosis of Superior Maxillary.**—About three months ago a young woman applied to me for treatment, and I found her suffering from an alveolar abscess. After the usual symptoms being manifested, fluctuation was detected. A free incision was made with a scalpel, and quite a quantity of pus flowed through the opening, much to the patient's relief.

The superior left central incisor, which was the offending cause, was then extracted, and the patient, who was in an extremely anæmic condition, was put on tonic treatment.

The opening made by the scalpel quickly healed, and the patient seemed entirely well. About four weeks later she again applied to me for treatment, complaining of severe pain about the seat of the former abscess.

A horribly offensive odor was issuing from the mouth, and on making an examination a sinus was discovered. On probing, necrosed bone was found. Fearing that unless treatment was decided upon the patient would again suffer with alveolar abscess, I decided to operate.

All the instruments to be used were boiled and placed in a solution of carbolic acid. The patient's face and mouth were washed with a solution of bichlorid of mercury. My own hands were disinfected with a similar solution.

The patient was then anæsthetized with chloroform By means of a circular engine-saw and a surgical engine a free opening was made on the outer side of the right central and the left lateral incisor teeth almost an inch deep. The bone and tissue were then cut away by means of bone-forceps.

The wound was then washed out and disinfected with a solution of bichloride of mercury. A dressing of carbolized lint was then packed into the opening and secured by ligatures to the adjacent teeth. This dressing was changed twice daily for one week, when it was removed entirely.

A mouth-wash, consisting of boracic acid, ten grains to the ounce of water, was given, to be used every hour. In two weeks after the operation the wound had healed, and there was little or no soreness.

An impression of the mouth was then taken and a plate made, with a left superior central incisor attached to it, together with a piece of rubber running up into the space left by the removal of the necrosed bone.

So far the patient has felt no uneasiness, and I have every right to believe that the operation has been a success. —B. D. Friedenwald, D.D.S., in *Ohio Journal.*

18. **Vascular Growths on the Gums.**—A very uncommon affection is a nævoid or vascular tumor of the gum. Such usually occur in adult or middle life, and are most commonly situated in the upper jaw, between the incisors and canines. They are generally of small size, about as large as a pea, and are often more or less pedunculated. They tend to increase in size; they are compressible, and can thus be

reduced to the level and color of the gums. They are of a bright red color, and bleed readily on pressure, etc. Hemorrhage is indeed their most important symptom; it usually occurs at night, when in the recumbent posture, and consists in a general oozing from the whole surface of the growth. In rare cases this may be very severe, and on this account they may require removal, though they are perfectly innocent, and do not return when carefully eradicated. This is best done by freely excising with the knife, including, at the same time, a small portion of the subjacent vascular and spongy bone. Cold and pressure will usually check any hemorrhage. Any subsequent sprouting granulations should be touched with nitrate of silver. Before resorting to excision, you might first try the effects of ligating the growth, or of destroying it by caustics.—Frank Lankester, L.R.C.P., M.R.C.S., L.D.S., in *Ohio Journal.*

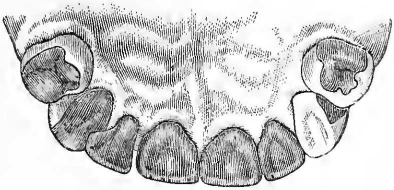
19. **Gold Backing Eroded Teeth.**—Upon examination, I found that not only had the cutting edges of the four incisors been much broken down, but that the enamel was also eroded or dissolved from the entire lingual surfaces of the four incisors (excepting a small part of the right lateral), most of the lingual surface of the left cuspid was stripped of enamel, and the right cuspid had also suffered from the same cause, but to a slight degree only.

Whatever may have been the etiology of the case, the treatment was as follows: Rubber-dam being applied to the incisors and forced well under the gum so as to effectually exclude all moisture, a narrow groove was drilled along the cutting edge of the right central and extended around the lingual surface of the tooth, as near as possible to its periphery. Several similar grooves were next cut across the lingual surface parallel with the long axis of the tooth, but not connected with the circumvallating groove.

The grooves were made as deep as circumstances would permit, and were slightly undercut. They were then carefully filled with Williams' cylinders of cohesive gold foil, thoroughly condensed by hand pressure. When the grooves

were all filled, gold was built across from one groove to another till all of the interstices were bridged, and the polished surface of dentine entirely covered. This golden surface was then built on till a sufficient and uniform thickness was attained. The gold on the cutting edge was carried over a short distance on the labial surface and also built down sufficiently to give the tooth a somewhat natural outline, but not enough to endanger the stability of the work or to disfigure the mouth with an unpleasant gleam of gold. The gold extended also in those small proximal cavities from which the remains of soft gold fillings had been removed. The whole was then carefully finished, making a strong but delicate armor for the defenseless tooth.

The operation was repeated the next day on the left central, and at subsequent sittings both laterals were similarly treated. The pulps of these teeth were alive, but that of the left cuspid was dead. The root of this tooth therefore, after treatment, was filled with gutta-percha, the cavity of decay with gold, and the whole of the lingual surface sheathed with gold in the manner before described. The appearance of the lingual surfaces after treatment is shown in the accompanying figure.



I have recently examined these teeth and replaced some smaller portions of gold about the cutting edges and one corner of a lateral. Once before, since the primary operation, were some very slight additions of gold needed, but, as a whole, the work has remained intact for eleven years. During this time the teeth have been subjected to the severest tests of mastication, the patient being a New York business

man now in robust health. Time is the crucial test of dentistry, and it has proved the usefulness and permanence of this operation.—Dr. Henry N. Dodge, in *International Journal.*

20. **Securing Loosened Incisors.**—On one occasion the temptation to attempt the retention of such teeth was increased by the pleadings of the patient, a gentleman about seventy years of age, in good health, and of good physique, who had more than the usual horror of artificial teeth, assuring me that he would bear any fatigue, put up with any discomfort, if I would but save his natural teeth.

The teeth had, as usual, elongated considerably, and when the jaws were closed, the four inferior incisors would sometimes shut inside and sometimes outside the upper ones, though the roots were long and still had quite an attachment to the gum.

The first step was to grind down the elongated teeth with corundum stones until they would clear the upper ones when closed. An impression was taken, and upon the dies obtained a cap of pure gold, about number 30, was swaged to fit the upper two-thirds of the lingual surfaces of the six teeth, and extending over the tops of the teeth to a point, perhaps, one-fourth of the distance down the labial surface. This cap, being carefully fitted, was cemented in place June, 1891, with zinc phosphate, and the edges of the cap burnished to the teeth wherever possible. The teeth were then thoroughly scaled and cleaned.

This pure gold cap has become loose, I think, twice since it was put on, but it is easily readjusted, and has in every way fulfilled my expectations, for the teeth are preserved, and, I think, can be indefinitely.—S. E. Davenport, *Ext. International.*

21. **Hints on Giving Gas.**—It would be better for the profession if dentists would use gas more than they do, and not talk heart, lungs, etc., to scare patients when they do go to a dentist who uses it.

Get the confidence of your patient, then be sure the

clothes are loose, to give free play to the diaphragm. Tell the patient to rest the hands on arms of chair, and be sure that they don't take hold tight; then there will not be the tired and exhausted feeling from nerve and muscular tension. Don't try to get too many teeth during one administration; better administer it three or four times at one sitting. Some use a mouth prop; but I never do.

I find that the gas-bags that have the outlet at end of bag is the cause of checking the free flow of gas, when it bends by pulling on outlet tubing, at the small point of the bag. To overcome this trouble, I have had a six-gallon bag made, with outlet coupling put on the side of the bag, which surely gives a free flow of gas.—Wm. C. C. Ball, in *Items.*

22. **Repairing Bicuspids with Porcelain.**—A young lady patient, having broken off the buccal cusp from her first upper bicuspid, had it built out by a brother operator with os-artificial, which had failed to stand the force of mastication. I advised her to have it built out with gold. But, on removing the filling, I found that decay had made such ravages on the proximal surfaces that it was impossible to put the rubber-dam on sufficiently close to keep off the secretion or to prevent hemorrhage during the necessarily tedious operation. Thinking of Dr. Bonwill's suggestion, I took an artificial bicuspid, ground it down flat, and, removing the pins, cut it off and fitted it nicely; then cut a deep dove-tailed groove lengthwise in its lingual surface; then warmed gutta-percha, and fitted it so as to perfectly replace the missing cusp. Next I took an impression and fitted a band very closely around the whole tooth; removed the band and gutta-percha; made good retaining points in the remaining cusp; placed the porcelain cusp in position, and again forced the band over the tooth; kept it firmly in position, and packed the cavity between the cusps with the best amalgam, allowing it to harden for forty-eight hours. I then removed the band and polished the amalgam. The young lady has eaten every meal on it since, and it would take an expert to tell the artificial from a natural cusp.—E. G. Smith, D.D.S., in *Cosmos.*

23. **To Make Gold Stick.**—Dr. Storey, of Dallas, Tex., said when his gold would not stick he passed it through tincture of iodin and then the flame, and it would stick like North Carolina resin.—*West. Dent. Jour.*

24. **Mirrors and Lamps for the Forehead.**—I have found a mirror attached to the forehead by a tight elastic band a convenience in working. Many dentists, the writer among the number, work much with the chair tipped back, and depend upon the image reflected from a small mouth mirror. The surface of this mirror being turned from the window frequently does not get enough light to make the cavity as bright as might be wished, and if an attempt is made to reflect light on its surface, from a mirror placed above and behind the patient, the operator's head frequently prevents this from being efficient, as it comes between and cuts off the light.

By placing a light mirror on the forehead increased illumination can be obtained, either by throwing the light directly upon the cavity or reflecing it upon the small mouth mirror.

A small electric lamp worn in the same position, though somewhat warm, answers well enough for this purpose, where the electricity can be taken from the street, but is entirely out of the question where the force must come from a factory; and beside is rather bright for the patient's eyes.

I think if some of the readers of the *Practitioner* will try this simple device they will like it. Many fillings fail because the cutting was done in a light which failed to show that the decay was not entirely removed.—William Herbert Rollins, D.D.S., *The Dental Practitioner.*

25. **Care of the Engine.**—To obtain the best results from our engine, and other dental machinery, it must be properly oiled and cared for. No engine or other delicate mechanism will be at its best unless properly *oiled* and *cleaned* when needed. Few dentists have any idea of the injury done their machinery by neglect. The engine, plugger, lathe-head,

fan, and all other machines used, should be oiled frequently with the finest of oil, and only a little quantity put on at a time, as often as once a week. The engine hand-piece, plugger, etc., should be taken apart, wiped off and fresh oil put on. Do not use enough oil so it will overflow, causing dirt and dust to collect, which not only soils the hands, but interferes with the working of the machine. A little attention to these matters will be well repaid.—Wm. H. Steele, D.D.S.

26. **Extracting to Implant.**—In extracting teeth which are to be replanted, or implanted, the crown should always be protected with sheet lead or sheet tin.—L. C. Bryan, in *Ohio Dental Journal.*

27. **To Stop Holes in Rubber-dam.**—In case holes are made in rubber-dam by accident, use short cylinders of *cork*, a little larger than the tear in the rubber. A groove is cut round the circumference of the cork, so that the edges of the rubber slip into it and hold in position.—D. V. Beacock, in *Ohio Dental Journal.*

28. **Filling Undercuts.**—Difficulties often occur with proximal cavities. You will frequently find extensive caries under the enamel cusps. You will have large undercuts, and such undercuts are difficult to fill with gold. It is good practice to fill these spaces first with oxychlorid or oxyphosphate of zinc, and I prefer the former, making the cavity more simple for the gold.—Dr. Crouse, *Illinois Society.*

29. **Contouring with Amalgam.**—I have been able to get as good proximal, contour fillings in the molars and bicuspids with amalgam as I often see of gold, by using for a matrix a piece of metallic finishing strip, held in place by the Booth matrix clamp, which consists of a steel wedge hollowed out so as to fit the contour of the crown, one of which is at each end of a strong clamp. This applied outside the strip matrix holds it solid and wedges the teeth apart at the same time.

Use a good amalgam as dry as possible, pack solid, wiping out the excess of mercury with pellets of cotton or bibulous paper, finishing with amalgam that is hot enough to expel the mercury.

Remove the clamp and draw the strip out sidewise, and finish with a thin strip between. The result is a beautiful contour, knuckling as close to the other tooth as though it had been built of gold, thus preserving the interdental space. Though I do not claim that amalgam is as good as gold, yet with care good results can be accomplished.—C. H. West, in *Dental Review.*

30. **Treatment of Fractured Roots.**—In the treatment of fractured roots I first tie a ligature around the root, bringing the parts closely together; then make an application of compound tincture of benzoin to the inflamed gums, and wait twenty-four to forty-eight hours. As soon as the soreness has sufficiently subsided, I drill a small hole through the fractured portions of the root near the gum and insert a gold screw. If there is a filling, it is replaced with Weston's cement, and care is taken that the opposing tooth does not strike the fracture in the act of mastication. The ligature can then be removed. After the parts are held together a while by the screw and cement, the inflammation ought to entirely subside. The crown or remaining portion can then be removed or so shaped as to receive a band or cap. This method applies to fractures extending some distance above the gum. If, however, the fracture does not extend too far above the gum, I remove it, and in fitting the band, cut it so as to completely enclose the space made by the removal of the fractured piece.—Dr. Banfield, in *International.*

31. **Burning the Holes in Rubber-dam.**—Burning the holes in the rubber-dam makes it less liable to tear. An old broken excavator answers the purpose, and by using a taper ing point the holes can be made any size.—Dr. Thompson.

32. **Getting Mold for Inlays.**—Taking, for example, a neck cavity in an upper central incisor, it is first necessary

to prepare the margin of the cavity, that is, to carry this back till an unbroken line of healthy tissue is obtained; for till this is effected it cannot be expected a perfect adaptation between the cavity wall and the glass inlay will result, for after the inlay has been fused, no alteration of the margin line must be made. Having obtained this, a *small* quantity of the deeper caries should be removed; but in no instance should any sensible undercuts exist, as they are likely to prevent the mold being withdrawn. To obtain a mold, gold foil, or platinized gold, of twelve grains should be employed, and I may here mention a difference that exists between the two metals. Platinized gold does not fuse at the same temperature as ordinary gold foil, and it does not apply itself so readily to the margins of the cavity, having a tendency to spring from its increased hardness. Having cut a square piece of foil large enough to exceed the cavity to a considerable extent, it is folded into *four* and then opened; by this means we obtain an apex which will pass to the bottom of the cavity. With the index finger of the left-hand, the foil is held at the margin of the cavity, and with a small pellet of cotton wool held in the dressing forceps in the right-hand, the wool is firmly pressed against the gold, and continued till it has been adapted completely to the margin of the cavity. The index finger of the right-hand may then be freely pressed against the wool and the overlapping gold foil, till it applies itself against the entire cavity, part of the gum, and surrounding tooth. If the gold is not previously folded, it is liable to burst by the pressure of the cotton wool, thus affording a leakage when the glass is being fused.—*Journal British Association.*

33. **Broken Instruments as Plugger Points.**—Broken cone socket excavators make the very best plugger points for the Snow and Lewis automatic pluggers. They just fit, and the newly fractured points are better than serrations.—Geo. M. Merritt.

34. **Abscess Evacuator.**—Dr. R. Walter Starr's device for evacuating an alveolar abscess by means of a flanged glass

tube and a compressible bulb was an improvement in the right direction, and I have supplemented and simplified it by adapting Dr. J. B. Wood's patented polishing-cups to the like uses. My method is to take one of these cups, say No.

2 (see illustration), and plug the mandrel hole with a piece of gutta-percha, which must not project on the inside of the cup. Then wet the inside of the cup, and place it over the gum so as to cover the opening into the abscess. Gently press the cup flat on the gum, and on removing the finger, the elasticity of the cup will cause sufficient suction to fill the cup with the contents of the abscess, which, by repeatedly applying the cup, may be completely evacuated. Medicaments placed in the tooth-cavity may likewise be drawn through the sac and sinus, and immediate root-filling be practiced with greater prospect of success than by any other means.—Thomas M. Hunter, D.D.S., in *Cosmos*.

35. **Root Canal Treatment.**—The canal is prepared, the rubber-dam applied, and thoroughly dried; as for any other method. Now place some bi-chlorid of mercury on a glass slab, add carbolic acid to form a thin paste; roll a small canal probe in it and thoroughly smear the entire length of the canal. Heat one of the home-made canal driers* hot and pass up into the canal, and carefully sear all parts of it. The root should be wiped out with absorbent paper cones, and the process repeated.—H. S. West, D.D.S.

36. **To Remove Broken Points From Root Canals.**—To remove broken instruments from root canals, pump eucalyptus oil into the canal, which so softens its walls that the instrument can be readily removed.—T. P. Williams, in *Catching's Compendium.*

37. **A Temporary Filling.**—Heat red or white gutta-percha on a porcelain disk or slab till sufficiently soft to be kneaded full of zink fillings; this will make excellent temporary fillings.—*Archives of Dentistry.*

* Described on another page.

38. **A New Matrix**—I consider the matrix one among our greatest time, labor, and patience (patient's) savers, and do not think any one who has become accustomed to using them would like to do without their aid; yet many of those now in use are not what they should be. A matrix that presents a flat, unyielding surface to the tooth is useless, as is also a band matrix that encircles the tooth and only has one or two points of contact. A matrix to be a success should hug firmly *all walls* of the cavity to be operated on; and should yield enough to allow of giving the tooth its natural contour, without being displaced. For years I have used thin German silver, such as is used by stencil cutters for making linen markers. Take a piece of the metal, double it, and cut in shape shown in cut A. Take a strip of rubber-dam, and

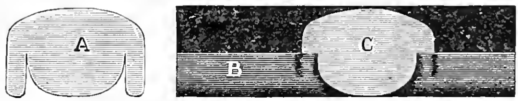


FIG. 1.

fold as many thicknesses as will pass tightly between the teeth; open the two plates of the metal and put the strip of dam between, as shown in B, and bring a single thickness under the lip C. To adjust the matrix, take hold of each end of the rubber and stretch it, at the same time carefully force the matrix down between the desired teeth, till the lower edge of the metal is below the bottom of the cavity; when through with the filling, cut off the lingual part of dam close to the metal; grasp the other end of the rubber with one hand, hold the matrix in place, stretching the rubber, carefully withdraw it; it can be removed without displacing the metal; and with a little care this can be done without injury to the softest amalgam filling.—Wm. H. Steele, D.D.S., in *Ohio Dental Journal.*

39. **Warm Instruments.**—No dental instrument should be used at a lower temperature than the blood. This may seem a small matter, but constant daily use has shown me that it is a source of comfort to patients. It is necessary that the means used to warm the instruments should be simple and automatic, otherwise it will not be done. I have a

closed copper vessel with flat top, measuring twenty by thirty inches, by one inch in depth. In one corner of the upper surface is a small upright pipe like the neck of a bottle, which is closed with a cork. This flat vessel covers the top of my operating case, one end projecting enough to allow a gas-burner to be placed under it without risk of burning the wood-work of the case.

Before use, the vessel is half filled with water and the cork put in. A simple automatic regulator turns down the gas when the temperature has reached the proper point, and maintains it there all day. I select the instruments to be used, and put them on the pan, where they warm in a few minutes. In addition to the instruments, six small glasses of water are kept on the closed pan; in one of these is a small chemical thermometer, which shows that the temperature is right; in another I keep the syringe for washing out the decayed cavities. The other glasses are for the use of patients in rinsing the mouth. If for no other purpose, it would be worth while to have such an apparatus to furnish a supply of properly warmed water without any care or attention. There is, moreover, not the least doubt that properly warmed instruments hurt less than when used at the temperature of the operating-room. My warming vessel was made by Peter Gray, 12 Marshall street, Boston.—Rollins, in *International Journal.*

40. **To Rotate a Tooth.**—Dr. R. B. Adair has a platinum band, to which is soldered a little cylinder; one end of a coil of very fine piano-wire is placed in the cylinder; the other is flattened and passed between the teeth. Almost any tooth can be thus rotated in two or three days with very little soreness or annoyance.—*International Journal.*

41. **Vent Fillings.**—Exigencies in practice sometimes require the adoption of methods not consonant with what would be esteemed the correct modes if time or other circumstances would permit. For example, a patient will, within a few hours, take train or steamer, to be absent sev-

eral months. A lower molar has, by the patient's neglect, become pulpless. In such a case it has been the practice of the writer to properly prepare the cavity for filling, as, for instance, in Fig. 1. From a box of common cooking gelatin select or cut a strip like A, Fig. 2; slightly warm it, and bend it into the bow-shape of B, Fig. 2. Insert the end of one such bow in the distal and put another bow in the mesial root-canals, as shown in Fig. 3. Out of the larger pieces of gelatin bows may be cut to suit the operator's purpose in any given case. It is, of course, assumed that proper preparation means drying as well as shaping the cavity, being careful to keep from the root canals anything that would obstruct them. The cavity is then filled with cement or amalgam, taking care not to displace the gelatin bows from the canals. So soon as the filling becomes hard enough to allow the admission of saliva, the gelatin will quickly soften so that the filling on that side may be finished flush, and the edges of the prospective openings be very slightly smoothed with a suitable round bur. The completed filling, as in the present instance, will appear as represented in Fig. 4, wherein B B indicate the vent openings.

FIG. 1.

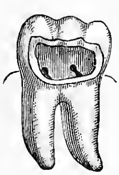


FIG. 2.

FIG. 3.

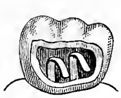


FIG. 4.

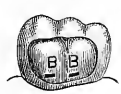
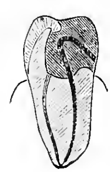


FIG. 5.



The patient may be at once dismissed, and the dentist be confident that in a few hours the gelatin plugs will have been completely dissolved, and the root-canals have free vents through the sinuses thus made, as is clearly shown by the section through the crown, filling, and mesial root represented by Fig. 5. It is remarkable that by this simple method the artificial sinus may be given a flattened or a curved form, and have its entire course through the filling, thus avoiding

any danger of decay by contact of the outflow with the crown or with the root, as in the Hullihen operation. Another noteworthy advantage is that in whatever tooth a vent may be thus provided, the discharge can be directed downward, so that the opening will not be liable to become choked by the gravitation of food débris. The opening may, moreover, be located at any desired point on the face of any filling. There is also a certainty that the internal mouth of the artificial sinus will open directly into the canal.

By the described method all the risks and uncertainties of ordinary rhizodontrypy are avoided, and the positive advantages before mentioned obtained.

In cases of this kind the patient should always be plainly told that the operation is but an expedient for the temporary preservation of the tooth, which is at the first opportunity to be subjected to painless treatment and the roots and crown permanently filled. The precise nature of the temporary filling should in every case be so carefully explained that the patient will be able to exactly describe it to the dentist who may be called on to complete the operation.—W. S. H., *in Cosmos.*

42. **To Remove Stains From Teeth.**—Peroxid of hydrogen made into a solution of the strength of five per cent, mixed with powdered pumice and well rubbed over the teeth removes most stains. The teeth should afterward be well cleansed with tepid water, but the application given above is harmless.—*British Journal Dental Science.*

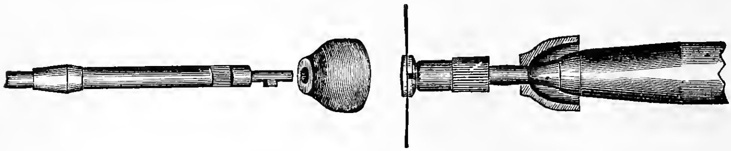
43. **Finishing Gold Fillings.**—The finishing of gold fillings, especially of proximal surfaces, is very easily accomplished after they have been properly prepared with abrasive disks. Take strips of Japanese bibulous paper, from a half to an inch in width, by four or five inches in length; sprinkle the surface with precipitated chalk, fold the material two or three times to retain the chalk in place; then twist the folded paper into a string, and use the same as finishing tape. This makes one of the finest finishing materials, and

can be used even when the teeth are in close proximity.—Gustavus North, D.D.S., *in Cosmos.*

44. **Pumice Carrier.**—Dr. G. B. Clement says, take any shape wood point and, when inserted and revolving in the engine, wrap it tight with a piece of absorbent cotton. This dampened makes a splendid carrier of pumice stone or powders.—*Southern Journal.*

45. **Capping Teeth.**—A gentleman whose upper molars and second bicuspids were gone, called to consult me in regard to the eight remaining anterior teeth. I found them worn down about $\frac{3}{32}$ of an inch, and very sensitive. I repaired them as follows: With a retaining-point drill I made a hole on each side of the pulp in the cuspids and incisors, and about one-quarter of an inch deep. A piece of 24-karat plate was burnished to fit the worn and irregular surface of the tooth. The position of the holes showing in the gold, a pointed instrument was forced through, and pins made of platinum wire, long enough to project a little, were inserted. The gold remaining in place, a piece of stiff wax was made to adhere, and trimmed to exactly represent the tip to be supplied. This was removed with the gold and invested in Teague's Compound, gold down; the investment covering the wax up to the cutting edges. Melting out the wax, I fused the plate scrap in mold till it was a little more than full, and, while it was in a molten state, pressed it quickly with the blade of a spatula. This caused it to take the exact shape of the wax model. With but little dressing it was a perfect fit. I prepared six of these, and for the bicuspids I made shell crowns. Placing each piece and the crowns in position, I took an impression, and transferred them to a plaster and asbestos model. With 20-karat solder I tacked them all together on the palatine surface. The piece was set with gutta-percha; so far it seems perfect. The work looks as though it had been built up in the usual manner, and it took but five hours to do it.—Dr. S. F. Gilmore, in *Items.*

46. **Hand-piece Protector.**—In the use of mandrels carrying abrading materials, especially when wet powders are employed, the gritty substances are apt to work along



the shank and into the nose of the hand-piece, which thereby becomes worn out of true. To avoid this injury, and also to keep out the saliva when using burs on lower teeth not inclosed by the rubber-dam, I slip over the bur or mandrel shank one of the small (No. 1) rubber caps used for polishing purposes, and find it to perfectly protect the hand-piece, as is made apparent by the illustrations.—J. D. Ennis, in *Cosmos.*

47. **Palm for Separating Teeth.**—Take a handle of a palm-leaf fan; cut into wedge shape; insert the wedge between the teeth, gradually increasing the size of the wedge inserted every two or three days, till the desired space is obtained, which will be accomplished without soreness or pain.—*Herald of Dentistry.*

48. **New Treatment for Abscess.**—There can be no alveolar abscess unless there is absorption of the alveolus, and that this absorption makes a cavity which must be disposed of, to effect a cure. The plan of procedure the writer recommends in such cases is: As soon as there is an abscess formed, it will be found that the root of the tooth, after extraction, has become denuded of its periosteum where the sac is attached. The point is to get rid of the abscess, and restore to a healthy condition.

The writer recommends the plan of filling the whole of the abscess cavity and root canal with a solution of gutta-percha in chloroform. To make this, take a portion of gutta-percha; cut in small pieces and put in a bottle containing chloroform, enough to make a paste of the consistency of thin cream. Clean the pulp chamber, root canal and abscess

cavity thoroughly—exhausting all the pus from the sac at and around the roots—wash with alcohol and water, equal parts, or with peroxid of hydrogen ; dry as well as possible. Then with one of Donaldson's little bristles, made for cleansing root canals, with cotton fibers wrapped around it, dip in the gutta-percha solution and introduce in the pulp chamber and roots, using the cotton-wrapped broach as a piston to pump the solution through the root canal into the cavity of the abscess, continuing to force the solution through the root till it makes its appearance at the sinus opening. If it is found coming too freely, lay the finger on the opening, thus causing the solution to be forced into any and every place around the root where the sac is, in this manner strangulating it and preventing the gathering of lymph, to be subsequently decomposed into pus. The abscess is thus destroyed. The gutta-percha, being an inert substance, becomes encysted ; nature, thus assisted, goes on and closes up the sinus ; and you will have no more fear than if there had never been an abscess. It has one more recommendation—to the patient, at least, it is painless.—Dr. D. R. Jennings, in *Dental Register.*

49. **Root Canal Dryer.**—One of the latest and best inventions for use in dentistry has recently been gotten out by Dr. J. H. Woolley, of Chicago. It is a root canal dryer, and consists of a handle, similar to that of a plugger. To the end of this is screwed a cone of copper, to which a copper broach of any size can be attached. The cone is heated in the flame till quite hot, then the instrument is ready for use; the heat being steadily conducted from the cone to the end of the broach. With it a root can be thoroughly dried to its apex. The instrument acts also as a disinfectant, destroying, as it does by heat, any microbes within the cavity. It has been highly indorsed by prominent dentists.—*Office and Laboratory.*

50. **Twisted Wire for Regulating a Protruding Upper Jaw.**—The teeth articulated well with the lower as far forward as the first bicuspid, and the lower arch in the bicuspid

region was broad enough to conform to and permit the teeth to articulate with those of the upper jaw. An appliance was made, consisting of a rubber plate, which covered the upper back teeth. In the right side of the plate was vulcanized one end of half-round platinum wire, which was passed around in front of the incisors and terminated at a loop in the free end. Two little hooks were soldered to the front of the band in such a way as to catch over the ends of the centrals when the plate was in the mouth, and prevent the wire slipping up against the gums. In the left side of the plate a staple was vulcanized.

When the plate was in position a copper wire was passed through both the loop and staple, and had its ends brought together and twisted, this producing pressure on the centrals, laterals and cuspids.

From time to time another twist was given to the copper wire, till at the end of seven weeks the teeth were in the desired position.

A retaining fixture was then placed, consisting of a strip of pure gold, No. 5 to No. 6 Stubbs, and French gauge, so bent and soldered as to form a loop at each end.

Having previously separated the teeth with linen tapes; the looped strips were covered inside with thick chloro-percha and passed around the anchor-teeth, allowing the loops to be on the outer side.

Copper wire was passed through these loops, and the ends of the wire were brought together and twisted till the pure gold bands were perfectly swedged to the convexity of the crowns, forcing the superfluous chloro-percha out at all points and making an accurate fit. (These bands did not move till taken off four months later.)

Copper wires were fastened to the loops left in the band at the buccal surfaces of the teeth, and brought around the front teeth, from both sides, and twisted together at the centrals. This drew the six front teeth to their exact places. The twisted ends were then bent over the cutting-edges of the centrals, to protect the gums from the wire. All rough places on the sides were then covered with gutta-percha.

The patient was instructed to remove the plate while eating, and by so doing a very good articulating of the finish was secured.

Positive and intermittent force is secured by such a use of twisted wires as above indicated. The principle involved is that of the inclined plane, which is also the principle made use of in the screw.

Appliances dependent on twisted wire for the application of force are easily made and applied, and possess many obvious advantages over the screw in very many cases. Wire of silver, galvanized iron, or copper, owing to their pliability, strength, and cheapness, will be found very easily applied and successful.—W. S. Davenport, in *Cosmos*.

51. **Hint on Treating Pulp Canals.**—Properly to treat pulp canals requires that the saliva should be kept out of them, and this is sometimes very difficult when the cavity of decay occurs above the gum line. In such instances it is impossible to so adjust the rubber-dam that moisture will not creep in. These troublesome cases have caused to many much trouble and annoyance.

When the cavity is dried thoroughly—and it will require some time and patience to do this—warm a piece of gutta-percha of suitable size, and pack it in the bottom of the cavity till it fills the whole to a point above the line of the gum margin. Apply the rubber-dam as soon as it is cold, and with a hot instrument remove that part which fills the pulp chamber and obstructs the entrance to the canal. It will require care to do this without disturbing the rest of the filling, but it can be done if the instrument is used hot.

This will form an effectual barrier against the intrusion of saliva when the rubber-dam is in place. The gutta-percha is to be left in position till the treatment is dône. If it is necessary tó put in more gutta-percha to seal up the cavity, during the periods between visits, adherence to the gutta-percha barrier is prevented by anointing the latter with vaseline.—*Practitioner and Advertiser*.

52. **Phosphor-Necrosis.**—About one-seventieth grain phosphorus is contained in each match-head. In the dipping and packing rooms is where the danger of phosphor-necrosis is greatest. Here they are handled more, and in damp weather fumes are given off. The effects of phosphorus are local. In my ten cases, all started from unsound teeth. Gums kept from the teeth by tartar is also a cause. It is generally thought that the patient must have been exposed for a long time to the fumes of the phosphorus. I know one girl who was exposed only two years. The physician rarely sees it in the initial stage. Generally the patient comes a few days after having a painful carious tooth extracted. He wishes to know why he still has pain.

Treatment.—Tincture of myrrh is good. Deep incisions have not been so successful in my hands. I am a firm believer in the early operation.

Prevention.—First, allow none to work in the dipping and packing departments who have not sound teeth. Second, good ventilation. Third, operators not allowed to eat dinner in their work-rooms, and compelled to keep their hands clean. Fourth, keep a solution of the alkaline carbonates near, as a mouth-wash.—W. C. Jacobs, M.D., in *Report in Medical and Surgical Reporter.*

53. **Effect of Hot Air on Cements.**—I have noticed that when a jet of heated air is directed on a filling of oxyphosphate which is undergoing the process of crystallization, the resulting mass becomes friable, with a tendency to granulate, owing to the increased rapidity brought about by the high temperature. It would seem better, therefore, to use a current of cold air or that of ordinary room temperature on such fillings rather than a hot blast.—H. G. Register, in *Ohio Dental Journal.*

54. **Before Introducing Syringe Needle.**—Before introducing the syringe needle into the gums, it should be dipped into a strong solution of carbolic acid, then washed in a five per cent. solution of the same, which should not be

wiped off; but if a drop remains on the point when it touches the gum, it will paralyze the tissue so that the needle will not hurt when inserted.—N. S. Hoff, in *Ohio Dental Journal.*

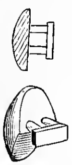
55. **Nitrate of Silver in Canal.**—If it is desirable to introduce silver nitrate into a root canal, heat a platinum wire and the crystals will adhere to it, and may be carried anywhere.—A. M. Holmes, in *Ohio Dental Journal.*

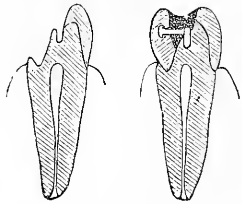
56. **Amalgam Finisher.**—In many places a narrow strip of rubber-dam, used as a tape, will serve admirably for the purpose of smoothing down to the borders and polishing amalgam fillings on proximal surfaces of the bicuspids and molars, and is especially good for removing any particles that may adhere to the gum between the teeth.—*Dental Office and Laboratory.*

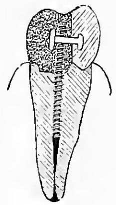
57. **To Splice a Broken Tooth.**—Some five years ago a lady had the labial surface of an upper bicuspid split entirely off, from the central depression to just below the gum. The pulp was alive and well, but the tooth presented a most unsightly appearance. The means adopted for remedying the difficulty were suggested by the case itself. I have used the same device a number of times since with great satisfaction, sometimes even instead of pivot teeth. A cuspid plate tooth with long pins was chosen. With a minim corundum stone, a socket was ground into the broken tooth just above the margin of the gum, in which socket the thin upper edge of this porcelain tooth could fit. After the porcelain tooth was fitted to its place and properly shaped, a strip of gold plate one-sixteenth of an inch wide was soldered across from pin to pin like a bridge, leaving about one-sixteenth of an inch between it and the tooth. (See Fig. 1.) The loop thus formed was fitted over a projecting portion of the dentine, and a slot was ground into the dentine to receive it. (See Fig. 2.)

A little dovetailing slot was also ground in on either side of the remaining dentine. A ring of very thin platinum

was then made, nearly as broad as the length of the tooth crown. This ring was placed around the broken natural tooth, the upper edge passing just beneath the gum. The







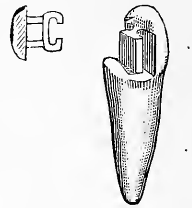


FIG. 1. FIG. 2. FIG. 3. FIG. 4.

porcelain tooth was then placed inside the ring, which held it steadily in position, the loop passing over the projection of dentine. The pressure exerted by the porcelain tooth was sufficient to fill out the ring in all parts and adapt its thin edges to the varying size of tooth and root.

This ring, serving as a matrix, was then filled with amalgam, malleted in around the pins and dovetails in the natural tooth. On cutting the ring off the next day and polishing the filling, I found all sensitiveness had disappeared, and with the restoration of a perfectly natural appearance of the tooth and its contour, I had a serviceable organ, which has continued to do duty ever since. In cases of pulpless teeth I have inserted a gold and platinum or platinum screw firmly in the root, and passed the loop formed by the two pins and the cross-bar over the screw, thus adding greatly to its strength. (See Fig. 3.) The amalgam, properly mixed, has no surplus mercury to attack a gold and platinum screw. I have replaced in this manner quite a number of teeth that were broken off level with or below the gum. By passing the drill through the loop of the porcelain tooth held exactly in the desired position, when drilling the hole for the screw, a most accurate adaptation can be obtained. An incisor can be made irregular to lap over its neighbor, and be varied otherwise to simulate the freaks of nature. A bicuspid root can be dovetailed inside the flattened pulp chamber. The amalgam driven

in this dovetail not only helps to retain the screw in position, but prevents its unscrewing, and assists in supporting the crown, and all this in a cleanly and inoffensive manner. In cases where the break in the natural tooth is not extensive, especially where it does not pass below the gum, phosphate of zinc may sometimes be used with advantage in this process. But this is seldom advisable, on account of the unreliable character of the material.

The bridge from pin to pin may also be shaped to lock in the dovetail slots previously mentioned, employing likewise the ring as a matrix for the amalgam investment. See Fig. 4, in illustration of the plate tooth and natural tooth thus prepared.—E. A. Bogue, M.D., D.D.S., in *Cosmos.*

58. **To Keep Cavities Dry.**—While filling, it is necessary to resort to a great many expedients, according to the situation and other circumstances. With many small cavities, a piece of spunk or string, or a roll of paper, crowded under the free margin of the gums, will serve the purpose admirably; cut the gums loose a little way, if necessary.—Items of Interest.

59. **Diamond Powder for Polishing.**—A year or two ago I commenced practicing with diamond powder for a variety of purposes. A little diamond powder goes a good way. I use a very little of it mixed with Hindoostan powder, and find it very effective. I use it with a copper point, or take an old bur, heat and soften it, and take off the bur part so I have simply a rounded part, dip it in oil of cloves or oil of wintergreen, and use it, and it is astonishing how rapidly it works, and what a bright, clean surface it gives. It is cheaper than you think, because you mix it with the other powder, and that saves it to a great extent, and it saves time enough to make the value of the diamond dust a very small matter. The ordinary Hindoostan powder will scratch; but the S. S. White Company, at my suggestion, have made two or three grades by precipitation, and the finer ones will cut and polish without scratching. Believe me, it is a matter of no small

moment to finish off a filling or roughened tooth-surface without scratching. I believe these different grades of Hindoostan powder are the best powders in the market for dental use.—Dr. George Evans, in *International.*

60. **Celluloid Top Bracket-table.**—I have used a celluloid sheet, instead of a towel or cloth, for the top of my table and my bracket. It is absolutely clean, is wiped off without the slightest difficulty, and it seems to meet all the requirements for a covering of that kind. The greatest objection to it is, that if you happen to let a match fall on it, it will burn very rapidly. It will warp a little if the sun shines on it; but practically it has no serious objection, and I would not be without it. It is cheap and economical, and a sheet will last two or three years. If you let sulphate of iron or iodin fall on it, it will, of course, stain; but for neatness and cleanliness I know of nothing that is its equal. I think enough to cover a bracket would cost about sixty or seventy cents. It comes by the yard or by the sheet, in all sizes, shapes and colors. You can get it at the Celluloid Company in Newark.—George Evans, in *International.*

61. **To Detect Dead Teeth.**—To distinguish a living from a dead tooth we have a very simple test in ammoniacal carmine stain. A dead tooth, or dead portions of the tooth, such as remnants of the pulp of the crown and the zone of dentine bordering the pulp-chamber, will never assume our carmine stain.—Carl Heitzmann, in *Ohio Dental Journal.*

62. **To Fill Roots with Chloro-percha.**—To fill a root with chloro-percha or any liquid, dip the points of a pair of Dr. Flagg's dressing tweezers, while closed, in the liquid. Carry them, charged with the liquid, well up the root. If they are then carefully withdrawn, and at the same time are allowed to open, the liquid will be left in the root.—W. E. Royce, in *Ohio Dental Journal.*

63. **Setting Inlays Hot.**—Dr. Green, New Albany, suggests that in setting a porcelain inlay in cement, the piece

of tooth be made as hot as can be held in the fingers before pressing home in the cement. The cement will set much harder.—*International Journal.*

64. **Oil Dressing for Root Canals.**—Oily dressing in a root canal, as the essential oils of cajeput, caraway, peppermint, etc., are pleasant to taste and smell, are both disinfectant and anodyne, are not dissipated by fluids, and do not impair the efficiency of cementum or pericementum.—Harlan, in *Office and Laboratory.*

65. **Polishing Teeth After Cleaning.**—If the pumice or other polishing material used for polishing the teeth after removing calculary deposits, be mixed with peroxid of hydrogen instead of water, it will be found much better.—Wm. H. Steele.

66. **Injecting Alveolar Abscess.**—Dr. E. C. Brownlee gives his method of treatment as follows: First fill the cavity of a pulpless tooth with a packing of common vulcanizable rubber; charge the hypodermic syringe with carbolic acid and alcohol; push the pipe through the rubber, and inject the abscess without any leakage around the pipe.—*Cosmos.*

67. **Amalgam That Will Not Shrink or Tarnish.**—I am confident that many of our young practitioners place too much confidence in the claims of makers, for these qualities. Any one who has thoroughly investigated the manufacturing of alloys, knows very well that the best combination of metals, most thoroughly prepared, can be made to shrink, expand, or quickly tarnish, under some conditions. I would advise the young, starting out in practice, to select one of the best alloys, then learn its peculiarities, and always, under all circumstances, work it just as carefully and thoroughly as though it were gold.—Wm. H. Steele.

68. **Using the Electric Mallet.**—If in using the electric or Bonwill mallet on teeth that are sore from wedging or

any other cause, operators (who have not before practiced it) would press firmly against the tooth or filling, *in the direction of the blow*, while condensing the gold, they would in many instances save their patients unnecessary pain, and be enabled thereby to make better fillings, because of the greater amount of thoroughness the patient would be able to endure with comparative comfort. Try it, and your patients will bless you for the relief that thoughtfulness in this and like trifles will bring them.—H. D. H., in *Cosmos.*

69. **Operating on Labial Cavities.**—Labial cavity in a lower cuspid, the gums and alveolar border had receded so that the cavity extended nearly one-eighth of an inch below the margin of the alveolar border on the opposite side of the tooth. This is perplexing to fill with gold. But take a piece of hard wood, shape it like a wood-carver's gage, only let each corner project that it may pass between the teeth, fitting it to the position on the tooth. Before applying the dam, saturate a thin piece of spunk with a 20 per cent solution of cocain, and lay it on the gums for five or ten minutes; do not have too much of the solution, lest it mix with the saliva. Now apply the rubber-dam; also the ligature, tied loosely for the present. Pull the rubber and ligature downward in front of the tooth, so as to expose the entire cavity and margin of the gums above the rubber. Place the stick in position and hold the rubber below the cavity firmly; let loose the rubber, and with a thin instrument carefully work the rubber to its place. In this an assistant may be of great service by tightening the ligature gently while holding the stick firmly in place with the left-hand. The cavity may now be prepared and filled entirely with the right-hand.—I. Douglas, in *Ohio Journal.*

70. **White's Plate for Regulating.**—Dr. S. A. White, in regulating, uses the same shaped plate for every kind of irregularity, a vulcanite plate having a band running outside of the incisors and covering the bicuspids and molars, and also a band on the palatine surface.—*International Journal.*

71. **Rubber Overcoat for Sensitive Teeth.**—A patient came complaining of hypersensibility of the second right upper molar. It stood alone, occluding with its fellow below, was slightly loose, had no decay, but so sensitive to heat and cold—on account of the roots being denuded—that eating and drinking were simply misery. I tried all the means I knew to reduce the sensibility, but without avail. Killing the pulp or extracting the molar were means I hesitated to employ except as a last resource.

The suggestion of wearing artificial teeth did not meet with his approval, by which means the tooth would have been covered with the plate, and would have no doubt improved the situation. I took, as an experiment, cotton-wool and mastic, and tied a strand around the molar; the result being satisfactory, I took an impression of the molar with wax—being preferable to modeling compound, on account of the temperature necessary—and made a very thin shell of vulcanite, perfectly fitting the tooth to the margin of the gums, leaving the crown exposed for the purpose of articulation.

The shell or overcoat, cemented on with oxyphosphate, has been in wear a month, and has completely frustrated contact with heat or cold. I may say it has proved a success. By such simple means I have been enabled to save the molar alive and receive the thanks and confidence of my patient.—H. H. Edwards, in *International.*

72. **Extracting for Nervous Persons.**—In extracting *teeth for very nervous persons*, I find that sulfuric ether, used on a small piece of sponge, and rubbed on the face, near the lobe of the ear, quiets them, and appears to lessen the pain. This is good, in conjunction with electricity; but don't use it too often on the same person.—Dr. Penny, in *Southern Journal.*

73. **Regulating Studs.**—Vulcanite and other fixtures for regulating teeth often require the attachment or insertion of studs or hooks, from which rubber rings may be

stretched on the teeth that are to be put in place. I have made such studs of celluloid or hard rubber in form like that shown in Fig. 1, drilled and tapped through its center as shown in the section, Fig. 2. This stud I readily fix on the plate or bar by means of the screw, and a section through the stud, screw, and plate (see Fig. 3) makes evi-

FIG. 1.

FIG. 2.

FIG. 3.

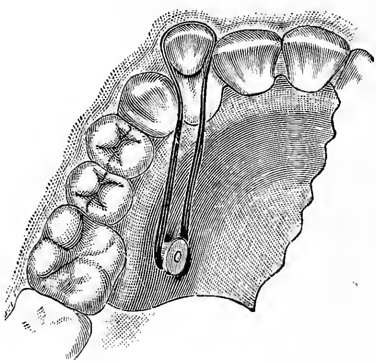


FIG. 4.

dent the security of the attachment. In Fig. 4 is seen a plate in place, and a rubber ring stretched from the stud to the lateral, which is being pulled into position. The size of the stud-shank is such that the ligature will not be cut by the strain, and the stud-head is round and smooth, and overlaps the ligature, so that the tongue will neither be chafed nor interfered with to any appreciable degree during the progress of the regulating operation.—S. J. Shaw, Boston, Mass., in *Cosmos.*

74. **Gas Cylinders Exploding.**—It ought to be generally known, if it is not, that nitrous oxid gas cylinders are liable to explode by undue expansion of their contents if exposed to heat. All who use or handle these cylinders should be careful to keep them at as low a temperature as possible, and never allow their exposure to the direct action of the sun. The bursting force of compressed gas under too high a temperature is tremendous—equal to a bombshell.—I. C., in *Cosmos.*

75. **Use of the Burnisher.**—The burnisher is one of the most important instruments in gold-filling. However well the filling has been inserted, the thorough burnishing of the surface is of prime importance. "But it makes the surface uneven." Yes, in proportion to the faulty packing. "But severe burnishing, especially with a globe-point, makes necessary much filing, and thus the destruction of contour." Better have no contour than leave pits and parts of softly-packed gold. Do even, thorough, solid work throughout, and you will not have much filing away as the result of very severe burnishing; and there is nothing like this for procuring a long-lived filling.

76. **Celluloid Matrix for Cement.**—As a matrix for cement fillings there is nothing like celluloid. It is the only thing that is fit for a matrix when you are using phosphate of zinc. You can fill one side, or put the matrix in between and throw the cement in on both sides; let the cement harden with that matrix in there, then slip it out and you have got a perfectly polished surface; it is just as smooth as glass.—Dr. Shulze, in *Ohio Dental Journal.*

77. **Cotton, to Remove from Pliers.**—A device for cleaning pliers of refuse cotton balls, which I have found convenient, is a small square of carding wire mounted on a ball of wood. I keep it on my bracket table, and when I wish to remove cotton, simply touch the wire, and pliers are at once freed, thus doing away with throwing the balls of cotton on the floor, or reaching across patient to deposit them in the cuspidor. It is but an instant's work to clean the wire after each operation is finished.—Dr. Alice Jarvis, in ITEMS OF INTEREST.

78. **Mirror for Reflecting Light.**—I want to show here a device I have had made for holding a little mirror, which is to be used as a mouth-mirror, or for the purpose of reflecting light in an obscure cavity. It is attached to a pedestal which is to stand on the operating tray, and has a projecting

arm about seventeen inches long. In height it is adjustable, and can be made to vary from five to nine inches.

It has also a hinge-joint, which makes it still more adjustable. Inside of the projecting rod or arm, which is hollow, runs a smaller rod, to which is attached a ratchet, which tightens or loosens the ball-and-socket joint at the other end. To this ball the mirror is attached. The movement of the glass is very free, and it can be placed at any angle and securely held there by clamping with the ratchet. By this device the cavity may be seen by looking in the mirror, or light can be reflected to any given point, and yet both hands can be free.

The liberation of the left-hand is a great point gained. This gives the opportunity for the use of instruments for holding the dam above the cervical edge of cavities, and for the holding of matrices and rubber-dam depressors, and for holding in place the first pieces of gold in filling.—E. A. Bogue, in *International Journal.*

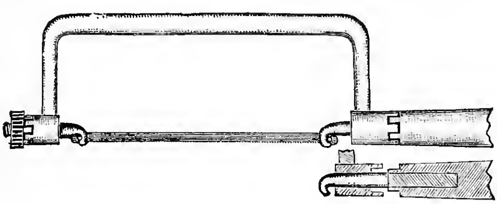
79. **Use of Screw in Extracting Roots.**—Having lately had rather a stubborn customer to deal with, in the shape of an upper bicuspid root, we propose to relate how we accomplished its removal with a small wood screw, when all our efforts with the forceps failed.

The root was almost covered by the gum, and though we took the precaution of passing a gum lancet entirely around the root, so that there would be no impediments to the insinuation of the beaks of the forceps, still there was so little sound substance on the root to grasp that the forceps kept chipping off pieces of the root at each effort at extraction, besides inflicting considerable pain. Feeling sure that we would fail with these efforts, we searched for the nerve canal with a probe. This being found, we gradually increased its size with different sized spear drills in the dental engine, after which we introduced a small screw in the enlarged canal by holding this within the beaks of a pair of incisor forceps. When the screw was well inserted in the root, we seized the head

FIG. 1.

of the screw with the same pair of forceps, when the root came away with little effort or force. Fig. 1 illustrates the screw inserted in the root.—Theodore F. Chupein, D.D.S., in *Office and Laboratory.*

80. **Cutting Off Roots with Saws.**—When a tooth is so broken that it is desirable to level down the remainder to the gum, there are several ways of doing this,—grinding, filing, and incising. If a saw could be arranged to do this work it would save time and some jar to the root. To provide a saw for this purpose has been an object with me, and the one here figured answers the purpose. It differs from the ordinary saws used in the mouth in having the blade so arranged that it can be revolved around the longitudinal axis of the instrument and fixed at any angle. A cheaper form of blade-holder for amputating roots can be made by



turning the ends of one of Dr. Clapp's saw-frames to an angle of ninety degrees. The frame figured is made to take saws of almost a fixed length, but to make it adjust itself to saws of varying lengths it is only necessary to continue one end of the gripping attachment through the handle and adjust the distance by means of a nut. This increases the cost of the instrument, and so the frame is figured in a simple form. —William Herbert Rollins, Boston, Mass., in *Cosmos.*

81. **Extracting Imprisoned Wisdom Teeth in Lower Jaw.**—My method is when the face of the tooth is looking toward and pressing against the posterior part second molar, so it is considered hazardous to use the elevating forceps, to split the gum back of the wisdom tooth, take the dental engine and with a sharp drill remove the bone, so the tooth can

be raised upward and backward. You will find the bone easier cut than to cut tooth one-fourth away with disks in separating it from the molar, though it is sometimes best to separate with disks. By combining both methods we can extract such teeth without breaking *jaw bones*.—A. Eubank.

82. **Copper Pulp-Caps.**—The essayist said that in his search for a pulp-capping that should possess the qualities of a non-conductor, an unyielding protector, and that should cause no irritation; he had adopted a concave cap of copper, varying in size to meet the indications. Such a cap, if properly adjusted, came nearest to his ideal of what a pulp-cap should be than anything else he had ever used. The method he employed is as follows: After thoroughly cleansing the cavity he wiped it out with eucalyptol and cotton to disinfect, and then with oil of cloves to soothe the pulp. Then, selecting a cap of proper size, he dips it in a thick solution of sandarac, which makes it adhere to the place where it is applied. He then mixes a paste of oxid of zinc and oil of cloves, which he works down around the edges and over the cap, which makes it non-conducting. He makes the caps by rolling down a strip of copper or copper wire to the thickness of thick writing-paper, and with a hollow punch, the copper strip being laid on a block of lead, strikes up the cap, which takes the concave shape of the punch. He had been using this method for about a year, and the results had been entirely satisfactory.—Dr. A. J. Parker, in *Cosmos*.

83. **Crouse's Method of Treating Abscess.**—Dr. Crouse's method of treating alveolar abscess is as follows: Prepare your cavity; it is not necessary to give the details, except that care must be taken not to force the broach in the pulp-canal, or get the cavity clogged with foreign matter; take a piece of soft India-rubber; cut it as near the size and shape of the cavity as you can; fill the cavity with carbolic acid; place the India-rubber in the cavity, and with it force the carbolic acid out through the fistulous opening. This is readily done with a blunt instrument and sudden force against

the rubber, such as is used in packing gold by hand pressure. One such treatment is generally sufficient, to effect a cure.—ITEMS OF INTEREST.

84. **Pain Caused by Biting on Fillings.**—The pain caused by biting on a filled tooth when eating, whether the filling be gold or amalgam, comes from the hypersensitive condition of the dentine itself. My practice is to remove the filling, clean the cavity thoroughly, swabbing it out with carbolic acid—ninety-five per cent—and then refilling the tooth.—Dr. Marshall, in ITEMS OF INTEREST.

85. **Teeth Sensitive to Changes.**—Exposure of the dentine causes an irritation of the dentine febrils, as indicated by an uncomfortable sensation in the use of cold and warm drinks. To counteract this, use a stimulating antiseptic.—ITEMS OF INTEREST.

86. **For Inflammation of the Pulp.**—Use bicarbonate of soda, applied to the cavity on a loose pledget of cotton, and covered with sandarac. The surrounding parts to be saturated with chloric ether.—Dr. Williams, in ITEMS OF INTEREST.

87. **Burnishing Cement Fillings.**—Cement fillings after having set, can be very much improved; rubbing a burnisher over with white wax, and then burnishing the filling.—ITEMS OF INTEREST.

88. **Polishing Cement Fillings.**—I have found by actual experience that cement fillings finished as follows are more impervious to moisture, and take a better polish, and are more durable, than by any other method I have ever tried: Give the cement time enough to fully harden, then dress it down with strips or fine sandpaper disks. Now to polish, put on a fine cuttle-fish disk, run the edge of the disk against a piece of white wax till coated; hold this against the filling lightly, and run at a *very high speed*, to heat the

wax into the surface of the cement. While polishing, lastly finish with agate burnisher.—William H. Steele.

89. **Packing Amalgam in Frail Teeth.**—One of the best ways I have found to pack amalgam, especially where the tooth is frail, is to use an engine burnisher of proper size, rotating quite rapidly; this not only packs the amalgam harder but draws the excess of mercury to the surface, where it can easily be taken up with a piece of tin-foil.—William Jennings, D.D.S.

90. **Determining Curve of Root Canals.**—If you take a No. 5 fine Donaldson nerve-canal cleanser, and pass it up a buccal root, and it simply goes half an inch, you may know it has not reached the apex; we know there are few buccal roots that are not more than half an inch long. Then you are confronted directly with a crooked root. If the instrument does not go three-quarters of an inch before meeting an obstruction, and if, after a gently vigorous turn, it does not go further, you know that you have a curved root. You could not turn the instrument very much before it would catch in the curve, and you would know there was something wrong. But what is the direction of that curve? The root is liable to turn in any direction; some branch out, others come together. How do you know which way it turns? Insert a No. 5 instrument, and it catches a little bit at a slight turn. The instrument being round, you can turn it without danger of breaking it off. When you turn it, hold the instrument between your thumb and forefinger very tightly, and remove it. When the point is visible, you find a slight turn in the end of the instrument, and that turn will be exactly in the direction of the curve of the root, if you have held the instrument firmly. Then put the instrument in the root, and use an upward and downward motion, and the instrument enters in the curve; press it gently in the direction of the curve, and you will find the instrument going farther and farther up. That curve is determined most positively by the instrument catching when you first

begin to turn it. When you find it catching, turn it gently, and, holding the instrument firmly, remove it, and you will see the direction of the curve. Putting it back in the root in the same position, and moving it gently up and down, it will go farther and farther.—N. T. Shields, in *Cosmos*.

91. **Applying Rubber-dam to Labial Cavities.**—In applying the rubber-dam to labial cavities under the gum, take a small-sized sewing needle, at the distance of, say, three-quarters of an inch from the point, and bend it in the form of an S, the point of the needle forming the long leg; stick the point in the neck of the tooth below the rubber-dam, just above the edge of the cavity; lift the upper edge of dam over the eye end of the needle, and the resiliency of the rubber will keep the needle in place, and the cavity dry. It is far ahead of any clamp for the above purpose. To prevent the eye of the needle penetrating the dam, put a little bead of shellac on the end.—D. V. Beacock, in *Dom. Journ.*

92. **Failure of Fillings from Frail Walls.**—The fault of many a bad filling is in the frailty of some part of its wall. By pressure of the plugger, or by blows from the mallet in filling, or by after-service, a check may be made in the enamel. It may not show till discolored, but it is almost sure to increase and loosen the filling, or make a break that cannot be successfully repaired. The tooth which is frail, either from thin or brittle walls, should be nearly filled with oxyphosphate, and finished with gold or alloy. But even if it is to be thus filled, it is better to break down such parts of the wall liable to become afterward defective. And yet, though we should be thus cautious not to leave such faulty walls, we should be equally careful not to cut away strong enamel that would be a protection to the filling, and prevent the unnecessary display of gold.—Dr. T. B. Welch.

93. **Replacing Dislocated Lower Jaw.**—Roth (*Lancet*, No. 3626, 1893) describes the following method of reducing luxation of the lower jaw:

The patient is seated in an ordinary cane-bottomed chair; the operator stands before him with one foot placed slightly to the right side and the other just in front of the patient and in the middle line. The operator is thus on a firm basis, with the legs well apart and fully extended. He then flexes himself at the hips, and asks the patient to lean forward and to place his forehead in the middle of the sternum of the operator's chest (but this position varies with the size of the patient's head). The operator now flexes his head so that his chin grips the patient's head about the upper part of the occipital bone; he thus acquires a firm hold, and has the head well under control between his chin and chest. The thumbs, protected in the usual manner, are placed in the patient's mouth, and the fingers of both hands grasp the lower jaw. In this position reduction is facilitated, and the advantages over the ordinary methods are as follows: 1, the operator has the head under perfect control and perfectly fixed; 2, the line of force exerted by the operator's hands acts in the same line as the resisting force exerted by the operator's chin; 3, the operator's elbows being well flexed, he can exert a greater power by the force acting through the thumbs being close to the shoulders, and it will be found that he has greater power of muscular action in the terminal phalanges of the same; 4, the patient's head is also in a better position for replacing a dislocated jaw; 5, the operator needs no assistant, and does not inconvenience his patient by the excessive pushing and pulling about of the head during the reduction.—*Therapeutic Gazette.*

94. **Napkins in the Office.**—Always keep a good assortment of nice clean napkins; they are not needed as much at the chair as they were before the introduction of rubber-dam, but can be found very useful in many operations, and often will be found preferable to the dam in short operations.—Wm. H. Steele.

95. **Operating Stool.**—If you have never known the comfort and luxury of an operating stool do not go without

one another day; mine cost about $1.90, and here it is: Buy of the furniture dealer an ordinary book-keeper's stool, cut off the legs to the required height. Now buy of a music dealer a cheap piano stool; bore a hole through the top, or seat, of the first stool, and attach the adjusting screw and seat of the piano stool.—Wm. H. Steele.

96. **Tooth and Gum Protector.**—A useful device for protecting an adjoining tooth, or filling in the same, when cutting out a proximal cavity or removing a filling may be easily made as follows:

Take an old mouth mirror, remove the glass and holder, and with a fine saw, or thin flat file, slit the metal shank, joining handle and mirror, about one-eighth of an inch, and in this slot solder a piece of thin flexible steel about one

inch long and one-third of an inch wide, with corners nicely trimmed and rounded. Press between the teeth and hold in position while shaping cavity next to adjoining tooth. Or use the shanks of broken burs, solder the thin strips at different angles to facilitate holding easily in various locations, and use the Kaeber engine-bur holder as a handle; or use for a handle a slit broach holder or a jeweler's slit pin vise, insert and clamp thin steel at any angle desired without soldering. This instrument will be found useful in many ways. May be used as a matrix for plastics, and also for smoothing off the material at cervical margin or removing any pieces that may be left beneath the gums, between the teeth, etc.—W. M. Jennings, D.D.S.

97. **To Prevent Finishing Burs Clogging.**—In finishing a gold filling you can prevent the plug finishing bur from clogging up with the metal by dipping in a little sweet oil. It also makes it cut better.—W. M. Jennings, D.D.S.

98. **Restoring Articulation of Tipping Molars.***—The observing dentist must repeatedly, in his daily practice, be reminded of how acceptable such an operation will be, and why he should continue to pound gold into cavities of teeth so tipped out of position as to be useless, without attempting to better their articulation, is hard to understand. With this operation, as in all contour work, anchorage is of first importance. Without ample anchorage, smooth, strong margins and clean surroundings count for nothing.

In most mouths where the first molars have been out long enough for the consequent changed position of the second molars to offer an excuse for this operation, you will find cavities already existing. If none offer a welcome anchorage, then with engine drill and bur make liberal retaining grooves, commencing in fissures and cutting with a heroic hand. It is better to bring these teeth into service at such a cost than permit them to remain of no use themselves, and in the way of any appliance that might be serviceable. In the preparation of the crown surface use the corundum wheels freely on cusps, or to prevent thin, over-lapping edges anywhere. Before beginning the operation, notice whether other movements besides tipping have taken place in either upper or lower molars. Aim to have the upper, as a rule, articulate one-quarter or one-third its surface outside the lower to prevent biting the cheek. The articulation of the other teeth must determine whether the articulating surface of the contour is to be a flat surface parallel with the general line of articulation, or an inclined plane. Shape these grinding surfaces so they may be constantly in contact in the act of masticating as the lower jaw moves from side to side. Cut out and fill any depression in a molar that may be in position, if necessary, to give a good articulation to an opposing contour. Attempt only to secure the millstone effect. Do not attempt the restoration of cusps, for though they are ideal, the material we use is faulty, and no amount of good wishes will add to its strength or wearing qualities.

* Read before the Michigan State Dental Society, June, 1889.

In filling the excavation use any method or style of gold with which you succeed best. My preference is for heavy foil when strength is of importance, folding back and forth ribbons of No. 60, and making most of the contour at least of gold and platinum foil, shade 2. Anneal carefully; condense thoroughly; finish well.—Dr. J. C. Walton, in *Ohio Journal.*

99. **Facial Fistula.**—When a fistula has opened on the outside of the face, on account of poulticing or from other cause, do not extract the offending tooth till you make an artificial fistula inside the mouth. The outside fistula will heal by granulation. If you extract the tooth before doing so, the tissue certainly will be greatly depressed, and an uglier scar result.—*Office and Laboratory.*

100. **Hint on Mixing Cements.**—I have noticed operators put the powder on the slab first, then use the cork of the liquid bottle to dip the liquid to the mixing slab. In doing this a little of the powder gets on the cork and is carried to the bottle containing the liquid, and will ruin the cement for future use.—William H. Steele.

101. **On the Use of Pluggers.**—A dentist who is going to make use of non-cohesive gold is not likely to make use of a broad foot-shaped plugger. He should use a wedge-shaped plugger to carry the gold toward the wall of the cavity. And if he is going to use cohesive gold, he can obtain the best results by the use of a fine-serrated, broad plugger, in proportion to the size of the cavity. If a dentist is going to fill a large cavity, his plugger ought to be correspondingly large; if he wants to fill a small cavity, his plugger ought to be suitable for such a cavity, and his instruments should be selected in some general forms, and various sizes of these forms. By doing this he will be able to accomplish that which he desires much more rapidly, satisfactorily and skilfully than he can by using pluggers made without any special reference to their size and form. It is painful to see

a good operator take a little fine pointed plugger and plug away, using cohesive gold, and taking an hour and a half to do what he ought to accomplish in half an hour if he used proper instruments and proper gold, and pluggers of the proper size.—*Extract Review.*

102. **Detecting Pulp-stones.**—How can pulp-stones be detected, and what is the cause of the trouble? You cannot advise the extraction of a tooth if you can find nothing about it to give trouble; but there is one thing I have used in my practice to satisfy my own mind, and that is, if you will take the finger-nail and scratch, producing a vibrating sensation, it will produce pain in the tooth; or use an excavator to scratch with, and if there be irritation by pulp-stones, it will respond to the vibration produced on the outside of the tooth.—Dr. Thomas, in *International.*

103. **Amalgo-gold Fillings.**—Steurer's plastic gold, worked in the surface of a soft amalgam filling, in large proximal cavities, gives the appearance and edge strength of gold, with the care of manipulation of gold.—D. M. Clapp, in *Office and Laboratory.*

104. **To Sterilize Softened Dentine.**—Dry thoroughly and apply: Carbolic acid, 1; oil of cassia, 2; and oil of cloves, 3 parts. Insert permanent filling at once.—Dr. H. A. Smith, in ITEMS OF INTEREST.

105. **How to Dry a Cavity.**—After applying absolute alcohol to the cavity, use a solution of sandarac and ether, line the cavity; dry this with hot air, which forces it in the ends of the tubules, completely sealing them; then proceed with the filling.—Dr. J. C. Templeton, in ITEMS OF INTEREST.

106. **Patching Gold Fillings with Alloy.**—I remember performing some very extensive operations with Nos. 60 and 120 gold for one patient who was undergoing a good many

constitutional changes, and these conditions manifested themselves in the teeth. He came to me in 1880 or 1881 with gold fillings on the buccal surfaces of the teeth and decay had recurred. I thought the best thing I could do was to cut out and fill with amalgam. I did so. After a year I found extensive decay on the proximate and lingual surfaces. I cut that out and filled in the same way, following right around at different times, till now I have gone entirely around the teeth. I saw the gentleman four or five weeks ago, and he spoke particularly of the manner in which I had saved his teeth. I consider it was due to the combination of metals.—Dr. Geo. A. Mill, in *N. Y. Odontological Society.*

107. **Anchor-Pins for Fillings.**—Dr. L. West, of Marionville, Mo., suggests the use of double-headed platinum pins as anchoring bolts for proximal fillings; that furthermore form more or less of the grinding surfaces of some molars and bicuspids, and are, therefore, liable to be dislodged by hard usage in mastication. The illustrations exemplify cases of that kind which have been made secure by building anchor-pins into the fillings, as suggested by Dr. West. The crown view and section of a bicuspid, Fig. 1, make clear the character of the operation; the anchor-pin being also shown separately, and magnified for more perfect representation. Fig. 2 is a similar illustration of the use of the anchor-pin in a filling which extends from side to side over the crown.

It is, however, a somewhat difficult matter to properly place the anchor-pin, because pressure on one hand in packing the material around it is likely to lift the other head from its bed, and this is especially liable to occur when the filling-material is amalgam. Instead of the headed pin, therefore, it is suggested that a section of platinum anchor-

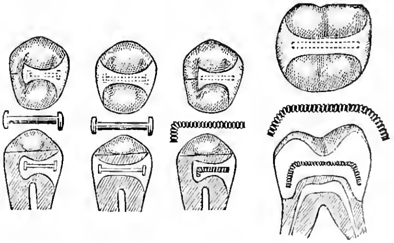


FIG. 1. FIG. 2. FIG. 3. FIG. 4.

screw wire may be more readily built in and more securely bolt the matrices together. This is made evident by Fig. 3, the detached screw-bolt being shown magnified for its better definition. A curved section of screw-wire may likewise be employed, as seen in Fig. 4. It is obvious that the screw-wire, unlike the smooth pin, will resist a parting strain at every point of its length, and special forms may be given the wire sections to meet any peculiar case.

The examples given will serve to place the several suggestions fairly before the profession as means for meeting emergencies in the class of dental operations for which they will probably be found occasionally useful.—S. H. W., in *Cosmos.*

108. **Disks and Strips, Soap on.**—In separating teeth, or cutting down fillings with sandpaper disks, first run both sides against a piece of dry soap. You will be surprised and pleased to see how nicely they will go between the teeth, and how much better they will cut the gold. Sandpaper and emery strips treated in the same way will cut better, and never catch or tear the dam. It is also more pleasant for the patient.

109. **To Protect Cement or Percha Fillings.**—Cut and file a piece of gold plate of the size and shape of the surface of the cavity. Now solder to its under surface the center of a narrow strip of gold and bend up the ends. As soon as the filling is placed in the tooth and while it is soft, press this cap on the surface. A gutta-percha filling may be made quite durable in this way, though of course the cap must be pressed on while hot.—Dr. Welch, in ITEMS OF INTEREST.

110. **For Offensive Cuspadores.**—Dr. E. O. Peck, of Morristown, N. J., uses a tablespoonful of copperas to counteract the offensiveness of his cuspador. This has been our practice for many years. We are not sure but we got our idea from Dr. Peck some fifteen years since.—ITEMS OF INTEREST.

111. **Gutta-percha Heater.**—To heat gutta-percha, make a little oven of soapstone. When in use, you light the spirit-lamp and place it under the end of the stone; at the same time the instruments to be used are passed through the opening at the end of the oven, over a wire loop, a wire netting inside, to the flame of the lamp, so that the instruments to be used and the gutta-percha will be warming at the same time. The slab is hollowed out, so that the small pieces of gutta-percha will not roll off. The stone heats gradually, and the amount of heat required can be regulated to a nicety by the size of the flame on the portion of the stone the gutta-percha is placed on. A piece of mica on the side enables you to see the flame and tell where you place your points, and get them as near the flame as you desire. The mica also prevents the flame from blowing out, if you are working in summer with the doors open and are in a draft. There is no danger of overheating the gutta-percha, and I find dry heat better than wet.—Dr. Geo. S. Allen, in ITEMS OF INTEREST.

112. **For Drying Root Canals.**—Use a solution of bichlorid of mercury and ether for drying out root canals; it is better than alcohol.—L. J. Mitchell, in *Ohio Dental Journal.*

113. **Treatment for Wounded Pulps.**—Where the pulp has been wounded, I should simply touch it with camphor; the alcohol in the camphor will evaporate, leaving the camphor itself, which is very healing and cleansing. One may follow the camphor treatment with a little oxy-phosphate, or cover it with gutta-percha, and go on with his filling.—Dr. Spaulding, in *Ohio Dental Journal.*

114. **Dressing Down Inlays.**—Those who practice porcelain inlaying have no doubt often found how difficult it is to grind down and smoothly finish inlays on the proximal surfaces of the teeth, when the space is too small to admit even the thinnest corundum disk. The ordinary emery

paper disks cut them down wonderfully fast indeed, almost as fast as they do gold. They are even to be preferred to the corundum wheel on labial and some buccal surfaces when a great deal of grinding is not required, and for fine finishing are superior. For the final polish I use the ordinary cuttle-fish bone.—J. Girdwood, in *Cosmos.*

115. **Splint for Supporting Teeth.**—As the planting of teeth is now becoming so common an operation, and probably destined to become more so, the importance of furnishing some means whereby a planted tooth may be firmly held and supported while it is becoming firm in its new position cannot be over-estimated. Lack of proper support is probably the cause of a large percentage of failures.

Fig. 1 illustrates a very simple and efficient splint for this purpose. It is easily and quickly applied, and may be worn any length of time without inconvenience to the patient. On each side of the space in which the tooth is to be planted is selected a suitable tooth. A strip of band material is made in the form of a loop, slipped over the tooth and drawn tightly about the same with a pair of flat-nosed pliers. It is then removed and soldered at the point of union, and the ends clipped off. Delicate pipes are now soldered to each of these bands, on the labial side and parallel to the axis of the tooth. After carefully drying the teeth, the bands are cemented in position. This may be done several hours or even days in advance of the operation of planting.

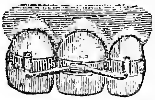


Fig. 1.

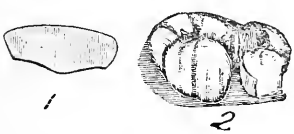
The tooth to be planted is banded and piped in the same manner already described, only the pipe is soldered to the band at right angles to the tooth. A piece of the gold wire of suitable length is cut to exactly fit these pipes. It is slipped through the pipe on the tooth to be planted, and each end is bent at right angles. The tooth is slipped in the socket already prepared, the ends of the wire are slipped through the pipes on the anchor teeth, and, as they pass through, are nipped off with a pair of wire cutters. This

will also flatten the ends slightly, which will prevent the splint from coming out of the pipes.

I have frequently dispensed with the band and pipes which encircle the planted tooth, using instead a silk ligature, tying the same tightly around both tooth and splint. This simplifies the operation, and in most instances is quite sufficient.

Dr. John H. Martindale, of this city, has used this form of splint with success in a number of cases for the support of teeth which have been loosened by alveolar necrosis or pyorrhea.—Dr. Edward H. Angle.

116. **How to Use Matrix Metal.**—In filling proximal cavities with amalgam I use a matrix made of matrix metal or silver composition strip. Cut off a piece of sufficient length and wide enough to extend from cervical border of cavity to coronal surface; cut off corners and shape as shown in Fig. 1. The cavity being ready to fill, place the matrix in position as shown in Fig. 2, being sure the lower edge extends below the cervical border of the cavity. To hold it in place push in a small orange wood wedge, shaped like a pen-knife blade, thin on the upper edge and the lower edge thick enough to fill the space. Use two matrices with a wedge between them where two cavities are to be filled in adjoining teeth. When through with the operation, draw out the wedge and the metal can be easily removed without disturbing the filling.—T. A. Gormly.



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117. **To Prevent Wedges Slipping.**—To prevent a wedge slipping or working loose while filling or separating teeth, dip it in sandarac varnish just before tapping it in place.—D. W. Barker, M.D.S.

118. **Substitute for Floss Silk.**—A good and cheap substitute for floss silk is harness maker's linen, thread No. 3. It is as strong as silk, has very little twist, so that it

passes between the teeth easily and only costs 8 cents per ball.—D. W. Barker, M.D.S.

119. **Incompatibility of Gold.**—It has been maintained by many operators that gold is absolutely incompatible with soft tooth-structure, but that teeth of hard structure can be filled with gold, and satisfactory and permanent results obtained. According to my practice, the first assertion is a great mistake. For example, take a large proximal cavity in a bicuspid. I always combine a large proximal cavity with the grinding-surface fissure, because if you leave the fissure or fill it separately you place the thin structure between the two fillings in a fine condition to break, which will make one or both fillings defective, and decay will surely follow. Leave no frail overlapping edges, but break them in from the grinding-surface, and, when finished, the space between the teeth will necessarily be V-shaped; likewise break in the frail edges on the grinding-surface, and leave not a trace of the fissure, because if the filling should end in a fissure a pit is compelled to result, and this pit will hold acids, and decay will follow. When the cavity is thus prepared, the whole cavity will likewise be V-shaped, which is exactly the reverse of the usual mechanism. Now make retaining points at the cervical margin and in the grinding-surface, then with great care build up with cohesive gold. Build up this tooth exactly to its anatomical contour, which will restore the grinding surface. This filling, if properly done, will finish without a flaw, and the adaptation of the gold to the tooth will be perfect.—N. T. Shields, in *Cosmos.*

120. **To Remove Deciduous Teeth.**—If you wish to remove a deciduous tooth, and, through fear, the child will not permit it, slip a piece of rubber tubing over the crown down to the neck of the tooth, and in a few days the tooth will be so loose that it can be extracted with the fingers.—Dr. W. H. Eames.

121. **Large Compound Filling.**—Large compound cavities involving the proximal and crown surfaces of molars

and bicuspids: Prepare the cavity and set a screw post as

shown in cut; put on the matrix and fill two-thirds with alloy, leaving about one-third the screw projecting above the filling. At a subsequent sitting complete the operation with gold, and finish nicely, burnishing all the edges down smooth.—Wm. H. Steele, in ITEMS OF INTEREST.

122. **Facing Alloy Fillings with Gold.**—My general practice is to restore the normal contour of the tooth with amalgam, at the first sitting, and subsequently cut away such portions of the amalgam as may be deemed desirable, replacing the same with gold, so that when finished, especially with the anterior teeth, nothing but gold shall appear to ordinary observation. This is not a difficult task in any save the most extreme cases. Good anchorage may be secured in and around the amalgam. A sort of chemical union takes place between the gold and amalgam, so that from a comparatively slight point of anchorage the gold may be built up and carried well over a slightly-rounded edge of amalgam, thus hiding it from view.—Dr. C. T. Tockwell, in *Cosmos*.

123. **Welding Gold and Alloy.**—Occasionally it occurs that gold must be added to or built over amalgam previously inserted. It is very important that all surfaces which come in contact with gold be touched with mercury, so that the gold may be soldered to the amalgam; the two metals, thus united, never show the joint by wear or chemical action, because the mercury, thin as the coating is, becomes an amalgam containing gold of higher potential or finer than the body of the plug. Practically, the gold element passes over the line of union in the body of the amalgam.—Dr. S. B. Palmer, *N. Y. Odontological Society*.

124. **Points on Nitrous Oxid Gas.**—There is a stage when patients refuse to inhale more gas. There is a convulsion of respiratory muscles and deep stertorous breathing. It is dangerous to go farther, for the patient is in what may

be considered an asphyxiated state. I begin operations here regardless of other symptoms. Some patients will take more, others less, before this stage is reached, and I get out as many teeth as possible during the period of unconsciousness. Sometimes it may be but one tooth, again it may be the whole upper set. The appearance of patient is usually as follows: Jaws set, eyes protruding and rolled back (when not closed), and a bluish or purple color about lips and face. Respiration is at first shallow, then deep and stertorous. There is always a very alarming and death-like appearance, which usually frightens the novice, and especially the friends of the patient who may be standing near; but this appearance usually passed away before the operation is completed. I consider nitrous oxid perfectly safe. Have administered it hundreds of times and have never seen an alarming symptom, though I have had my share of "fun" with fractious patients. I am satisfied the effects produced on different patients is due entirely to individual temperaments and idiosyncrasies. The most troublesome patients are of highly nervous organisms and excitable dispositions. Many possess a mortal dread of pain, and they come in with their nerves worked up to a concert pitch of excitement. Many can make themselves do what is required of them, if they have a strong will power, but soon as this will power is overcome by the effects of gas, their terrible dread of pain gains the mastery, and immediately produces an involuntary resistance; hence the degree of anesthesia is usually in proportion to how much the patient dreads pain.—Malcolm W. Sparrow, D.D.S., in ITEMS OF INTEREST.

125. **Using Elevating Forceps.**—In using the elevating forceps in extracting under third molars, a piece of sheet tin or other substance should cover the back edge of the second molar to prevent its fracture.—*American Journal of Dental Science.*

126. **Contour Fillings.**—It may be laid down as the rule that the contour of all fillings which will be subjected

to great strain, should be such as to most fully protect them from any force of impact that would tend to dislodge them, or to drive them away from the walls of the cavity.

This rule, of course, only applies after the restoration of such natural contour as may be essential for hygienic or esthetic reasons, and may be more profitably followed in proximal and crown surfaces in molars and bicuspids.

In these, where the decay extends below the point of natural contact of the proximal sides, it is essential to reproduce the natural contour to such an extent that the fillings may, when finished, touch again at the same point. This is necessary to preserve the interproximal space toward the necks of the teeth, and also to prevent food from crowding between the teeth and on the gums, where it sometimes causes serious disturbance.

Beyond this point a restoration of natural contour is rarely, if ever, to be tolerated.

From the point at which restoration of the natural contour on the proximal sides ceases to be essentially up to the termination of the filling in the crown, the surface should gradually slope; or, to reverse the statement, the surface of the filling should slope downward from its most remote edge, either mesially or distally, to the point at which it is desirable to commence the restoration of the original contour on the proximal surfaces.

The anchorage of such fillings should be made as strong as possible without weakening the tooth. There should be, if possible, a strong, square base at the cervical portion of the tooth—a firm seat, that shall be at a right angle with a perpendicular line drawn on the proximal surface, and the walls should be made as nearly parallel as possible.

Unless the walls are extremely thick and the dentine very firm, it is better not to make any undercuts or grooves, but to rely entirely on the proper seat and thorough anchorage in the crown. If they are thin, or the dentine of poor quality, grooves and undercuts must not be made. If the square seat cannot be obtained, as large retaining pits should be drilled as can be done without endangering the pulp. Of

course, this is only a general rule, and subject to such modifications as the peculiarity of each may render necessary.

Where such shapes as have been described are given to fillings of this character, the force of impact tends to slide over the surface and not to drive the filling away from its seat.

If, on the contrary, the filling is built up so that its grinding surface presents a horizontal plane, even the force of mastication will tend constantly to drive it outward from the center of the tooth. If the restoration of the original contour is carried still further, and the marginal ridge is raised in the normal form, the strain on the filling will be much greater, and its value correspondingly impaired.

Now, in many cases, where the cusps of the natural teeth which antagonize the gold filling are very long, it is necessary to grind them off, as well as to shape the surfaces of the fillings as above described. Without thus grinding off the cusps, it would, in some instances, be impossible to get sufficient thickness of gold to insure any stability of the filling.

It will undoubtedly be urged by some that such extreme precautions are not necessary, if cohesive gold is solidly built up, as it can be, from a secure anchorage made at all possible points.

Such a defense of the practice of restoring the natural contour in situations that have been considered, can only come from a want of knowledge of the materials we have to deal with and the principles on which our operations are based.

If two fillings could be placed in precisely corresponding situations by the same hand, one contoured as laid down in the above rule, and the other contoured proximately to the original shape of the tooth, and we could be assured there would be no recurrence of decay, of the first it might be predicted with assurance that it would last indefinitely; while of the second, it could positively be asserted that it would fail. The latter might, under favorable conditions, last for some years, but it would eventually be certain to

give way simply through the agency of mechanical force. Yet it has been my experience that the tooth is exceedingly sensitive around and under that filling. I have had a different experience from some of the gentlemen, inasmuch as instead of finding the fillings soft, so they could be taken out with a spoon excavator, they seem to me to be as hard as steel. It is difficult to make the two things agree. I have come to one conclusion in regard to this amalgam, and that is, never to use it except in cases where we have very soft, white teeth, where the saliva is inclined to be acid. Take, for instance, teeth which are pearly white, and in which the decay is rapid. I have seen many where it has been in such mouths for several years, and doing beautifully, as black as ink, the lines perfect, no sign of decay. I met a case of that kind a few days ago, and I was pleased to see how beautifully the teeth were being saved, but I think such are exceedingly rare.

The cases thus far considered are the most important, and those most likely to fail from improper contouring, but there are others where the observance of this same principle will prove of great value, though it can be carried out to only a limited degree.

In the building down of incisors where a considerable portion of the labial wall has been lost, it is desirable to slightly slope the cutting edge of the filling from its most distant mesial or distal proximal corner up to the point of contact with the tooth. This would unquestionably lengthen the usefulness of such fillings as compared with those that were absolutely restored to their original contour. In all such restorations—sharp corners should always be slightly rounded.

With regard to the anchorage of such fillings—the same rule holds good as given before.

There is one other situation in which the restoration of natural contour would be undesirable, and that is in proximal fillings in the upper incisors, where the palatal angle of the filling should be cut away so as to leave a self-cleansing surface.—J. W. Cormany, in *Review*.

127. **Fillings Below Gum Margin.**—I have never found a process, or material, that gives as good satisfaction in these cases as combinations of alloy and gold. These cavities nearly always occur on the proximal or labial surfaces. My method is to remove the decay; get smooth edges to the cavity; put on a band matrix, reaching from the lower edge (or part under the gum) of the cavity, half way to the crown of the tooth. Now adjust the rubber-dam and fill the cavity one-third full—or to a point a little above the gum line—with white gold and platina alloy; and plug the balance of the cavity with gutta-percha. At a subsequent appointment, adjust the rubber-dam, smooth off the filling, drill two or three retaining pits; and complete the operation with felt gold and hand pressure. The whole filling should be nicely smoothed and polished. Fig. 3, shows a labial cavity in a bicuspid complete.—Wm. H. Steele.

Fig. 3.

128. **Capping Exposed Nerves.***—In order to attain success in an operation which has for its object the preservation of vitality in an exposed tooth pulp, it is necessary that the pulp be healthy, and that it be so protected as to maintain this condition. Place the rubber-dam on the tooth to be operated on, and one or two adjacent teeth, in order to have plenty of room and light to work. The rubber being in place, and the cavity properly prepared, take a piece of very thin copper, place it on a block, and with the round end of a small instrument, or a suitable size ball burnisher, press it down into the wood, making a shallow cup like disk. Next, take a general view of the cavity and exposure, to determine the size and shape to cut the disk, the diameter of which should be such as to permit the edges of the disk to rest on the sound dentine that forms the border of the exposed orifice.

Mix fine powdered asbestos with carbolized resin, to form a thin paste; put a small quantity of this on the sunken

* Extract from paper read before the Iowa State Dental Society, May, 1894.

side of the disk, and place quickly and carefully in position over the exposed nerve.

Now, with some good cement, fill in around the sunken edges of the disk, building up even with the highest part, making as nearly as possible a level bottom to the cavity, and holding the cap firmly in position. It is *very important* that the cavity of decay should be cleared of all loose particles before setting the cap. This should be done by gently syringing out the cavity with warm water, containing a few drops of listerin, before setting the cap.—William H. Steele.

129. **Preparing and Using Tin for Filling.**—Tin may be worked in various forms. When the cohesive properties are to be relied on, there is perhaps no better method than rolling the foil in a loose rope, and cutting in pieces of various lengths. In cavities surrounded by strong walls, the tin should be folded into tape or made in cylinders, and time will be saved by introducing it in the cavity. Shavings of tin turned from a revolving ingot of the metal in the lathe work with a softness which makes it a pleasure to use them. I have only a word to say about tin shavings and the wheel from which they are turned.

An ordinary corundum wheel, one-half inch thick and two inches in diameter, is used as a model, and is molded in sand. The tin is melted in a ladle and poured in the sand, after which a hole is drilled in the center of it, so that it can be mounted on an arbor and turned in the lathe. A chisel on the side-rest is used as the tool, and these shavings are turned off the thickness desired.

Pure tin freshly cut from the wheel in the form of shavings is quite cohesive, and packs beautifully. When tin and gold are combined in the same filling, I think there should be at least two leaves of gold to one of tin.

My habit is to put one leaf of No. 4 tin between two leaves of No. 5 soft gold foil, then fold it and cut into narrow pieces.

I am not particular what kind of an instrument I use to pack the tin with. An ordinary excavator with the point

dulled or broken is as good as anything. The tin is so cohesive that it works as well as cohesive gold foil.—Dr. E. T. Darby, in *Cosmos.*

130. **Extracting Third Molar.***—When once the decision is made that the comfort and well-being of the patient would be favored by the absence of one of these bad third molars, it should be removed with such heroism of operation as the case requires. If the ordinary instruments and procedures for extracting teeth cannot be brought to bear, or will not answer, it should be made a surgical operation with such appliances as will suffice. The extent and difficulty of these operations are not out of proportion to the seriousness of the troubles to be relieved; and dentists are the ones to operate. The instruments and the details of the operation are to be determined by the peculiarities of each case. Ordinarily, the more difficult of these operations are not to be undertaken without that deliberation and control which are commanded by full etherization. Notwithstanding the patient's inability to open the jaws more than a small fraction of an inch, full opening of the mouth is rarely difficult to accomplish under ether with lever- or screw-power, and a firmly fixed prop seems to retain the opening.

For a third molar, tipped forward and impinging firmly against the distal surface of the second molar, a most helpful next step is the freeing all of that contact by grinding from the third molar with a corundum disk with the engine. This very greatly facilitates the extraction of the third molar, and effectually guards against the deplorable accident —which has occurred—of extracting both second and third molars in the effort to remove the third. The frequent backward curve of the roots of the lower third molar is to be remembered. With the anterior surface free simple lever-power, cautiously applied with a suitably-shaped elevator, may suffice to dislodge the tooth, or to so break up its attachment that the after-removal is easy. Sometimes the process at the sides and overlying the back of the tooth

* Read at the meeting of the Academy of Dental Science.

is so thick and strong as to hinder grasping the tooth with a forceps or to prevent its being lifted—a condition of things particularly embarrassing when the tooth is frail, deeply-decayed, tunneled, and brittle. In such instances, after suitable dissection of the soft tissues, the bone should be cut away with sharp engine-burs till the difficulty is overcome. Considerable experience has confirmed the conviction that ingenuity and an earnest persistence on the part of the operator, with co-operation on the part of the patient, may surmount the difficulties attendant on the removal of almost any third molar. —Dr. C. A. Brackett.

131. **Papillary Growths on the Gums** come next on our list. These may occur on the gums, but are exceedingly rare. They consist simply of hypertrophied papille, and are really unimportant. Caustics sometimes arrest or cure the growths, but a free excision is usually the best treatment, though even after this they sometimes tend to recur.—Frank Lankester, L.R.C.P., M.R.C.S., L.D.S., in *Ohio Journal.*

132. **Warty Growths on the Gums** are also very rarely met with, but they do occur, and much resemble the ordinary cauliflower excresences so frequently seen on the hands, etc. They are quite innocent, but there is often very considerable difficulty experienced in getting rid of them, just as is the case when they occur on the hands. At the same time, there is the liability for them to take on a malignant character. They are of a pale whitish color, and contrast very strongly with the surrounding red gum.—Frank Lankester, L.R.C.P., M.R.C.S., L.D.S., in *Ohio Journal.*

DEPARTMENT B.

DEPARTMENT B.

133. **Suggestions about Plaster.**—Plaster will set more rapidly if tepid (not hot) water is used, than if we take cold. A clean smooth cup is the most convenient vessel in which to mix plaster, rubber bowls being especially unsatisfactory to one who has become accustomed to the thin cups. New cups should be obtained as often as the surfaces become checked so that the plaster is difficult to remove. If an excess of material has been used, scrape it out in the waste box, and what little there is left in the cup will easily come away when hard, by filling the cup with water.

To mix plaster, put in the cup at the outset about as much water as judgment indicates will be needed. To add water later is a mistake. Drop in the plaster a little at a time, allowing it to disappear below the surface before adding any more; repeat this till the plaster protrudes above the water, which refuses to take up any more. Then stir vigorously with a smooth *clean* knife, and a mixture moderately stiff and perfectly smooth will reward you. The more it is stirred the more quickly it will set, and the stiffer it gets. Use it for the purpose in hand when it has reached the required consistency. If on mixing it is found that a miscalculation has been made, as the mass is thin, do not add more plaster; such a step will ruin everything. Pour off any excess of water, and then stir till stiffening begins. Mix enough plaster at the outset, because to mix a second batch, especially in flasking, gives a mass one part of which will set sooner than the other, which is often very undesirable. In taking an impression of a large surface, this sometimes becomes necessary. Then mix the first batch quite thin and flow it over the entire surface of the object of which a duplicate is desired. Then add other plaster till the impression is as

thick as needed. By the time the last lot has set, the first will usually be hard, and all will be well.

In mixing for impressions of the mouth, use fine plaster, add a little salt and a little powdered pigment; Venetian red or Spanish brown serve admirably. This will produce a quick setting tinted impression material, which can be readily detected from the model which is to be poured in it. The plaster must be mixed as described, care being taken not to have it too thick. Do not stir till in the presence of the patient.

Then stir till it can be felt that the mass has begun to stiffen. Fill the cup rapidly, carry it to place firmly and hold it there motionless. If there is a high roof put some plaster in the vault with the knife. If it is feared that the buccal portions of the molar teeth may not be reached, place plaster there also, before inserting the tray. As soon as the plaster begins to set in the cup, chop it up so that it may be more readily removed when the cup is to be cleaned. As soon as the material in the cup will fracture sharply, remove the impression regardless of possible fracturing. If this does occur, collect all of the pieces from the mouth; they may be replaced so as to form a practically perfect model. I have made up an impression from thirty odd pieces and secured good adaptation.

To procure a lower impression, put but little plaster in the tray, place plaster around the teeth in the mouth with the knife, being sure to cover all surfaces of the teeth; then quickly insert the tray and let the mass harden, and remove as before. In very difficult cases, where the teeth are long and perhaps loose, dispense with the tray altogether. When the material is sufficiently set, split it into sections with a sharp pen-knife, and afterward join the fractured pieces together as before.

To pour a model, use a shaving brush, and with soap-lather thoroughly soap the surface of the impression, especially in the pits for the teeth, and be careful to wash all the suds off afterward; otherwise the surface of the model will be pitted. Mix the plaster moderately thin. Have the sur-

face of the impression saturated, and a little water in the pits for the teeth. Start the plaster in the last molar and let it fill up and run over in the other pits, forcing out the water ahead of it till all are filled. Then turn the impression over and shake the plaster out of the impression back in the cup. This insures a thin film of plaster over the entire surface. If the process is now repeated and the impression slowly built up without turning it over, the result will be a most accurate model.

Where the model is to be used for gold work, and dies must be made; if there are any teeth present, a pin should be placed in each. In doing this cut the heads off, and later the plaster teeth may all be broken off, the pins withdrawn, the dies made, and the teeth readily returned to position, where they may be again fastened by using a camel's-hair brush and plaster very thin. In repairing models in this way, take a saucer with a little water and drop in a little plaster, but do not stir it. The plaster may be taken up with the brush; placed along the joint between tooth and model, and as it soaks in, the excess must be wiped away with the brush filled with water.

When it becomes desirable to trim a model, after it has lain around a day or two, and so become quite hard, dip it in water for a few minutes, and it may be readily cut with a sharp pen-knife. If an impression is filled and allowed to stand over night, drop it in hot water, and the steam generated will make separation more easy. Models should always be well soaked before more plaster is added to them. If, however, it is desired to preserve a model, on which a plate is to be vulcanized, it may be readily done by soaping it slightly and flasking it as dry as possible. With care, after vulcanization, the investment may be removed without injury to the model, which, if then allowed to dry, may be separated from the plate.

To mix plaster and sand for investment of gold pieces, drop sand in water, and without stirring pour off as much water as will run out. If now half the quantity of plaster be added, vigorous stirring will produce a mass of the proper

consistency. At first it will appear stiff, but by stirring, the sand will soon yield enough water to saturate the plaster, when the whole will become incorporated.

Never varnish plaster under any circumstances, except for moulding in sand.—Rodrigues Ottolengui, in *Dental Mirror*.

134. **Axioms of Prosthetic Dentistry.**—1. If many teeth have been lost, and the patient has reached that condition when an artificial denture must be worn, the first thing to be considered is: "What must be done to make the denture as useful and *comfortable* as possible?" If the extraction of other teeth will secure this result, extract them.

2. When artificial teeth are required, there is nothing in which skill is so important to personal appearance, health and comfort. Remind your patient of this when she is "shopping" for them.

3. The more difficult it may be to secure an impression, the greater the necessity for the use of plaster.

4. There are more failures from faulty articulation than from misfits.

5. Never allow the front teeth to meet, except in the rare cases where the protrusion of the lower jaw brings the upper teeth inside.

6. Never allow a lower second or third molar, which has been thrown forward, so its crown stands at an angle of about 45°, to be met on its face by an upper tooth.

7. When the cuspids have been extracted a year, there is always room and necessity for the plate to be worn higher and the gum fuller, to restore the contour of the lip.

8. There is no necessity for vacuum cavities in full upper dentures, whatever the shape or condition of the alveolar ridge and palate.

9. The nearer the karat of the solder to that of the plate, the more satisfactory will be the results. No lower karat than 18 need be, nor should be, used.

10. A full set of single gum teeth, soldered to a gold plate, in these days of rubber attachments and continuous gum work, is an abomination from every point of view.

11. "Combination" dentures of any kind which cannot be repaired without making almost a new denture (and there are such) are an imposition on the patient.—Dr. L. P. Haskell, in ITEMS OF INTEREST.

135. **Gas-fitting in Laboratories.**—In these, the gas supply pipes should always be very much larger than is ever required. It is not a question of the possibility of obtaining sufficient gas, but that the supply shall be large enough to admit of great variations in the demand without interfering with operations in progress, and the area of pipes given for specific supplies must be at least doubled for laboratory use. In addition to this, a good governor of ample size is a prime necessity, as, without it, exact work is impossible. Few laboratories are properly arranged for precision in the gas supply, and this entails not only a very great waste of time, but prevents exact work being done. A laboratory with a deficient and ungoverned gas supply lacks the one element of precision, without which, experimental work is of little value.

ATMOSPHERIC BURNERS.—All atmospheric burners depend on three parts, which must be in definite proportion to each other; any alteration which reduces the capacity or power of any one of these parts, reduces the whole power of the burner in proportion. These points are: The size of the gas outlet, the diameter and length of the mixing tube, and the area of outlet for burning the mixture. Approximately, the diameter of the outlet in the gas nipple must not exceed one-eighth of the diameter of the burner tube for 16- or 18-candle gas; the length of blank tubes for mixing must not, in horizontal burners, be less than five times the bore, and in vertical burners eight times the bore. The total area of outlets, either of holes or area between the meshes of gauze, must not exceed the area of the tube itself.

BURNERS LIGHTING BACK.—If a burner which has once been satisfactory commences to light back at the jet, the cause will probably be found in an obstruction of the gas jet, which alters the proportion of gas and air, or if the burner

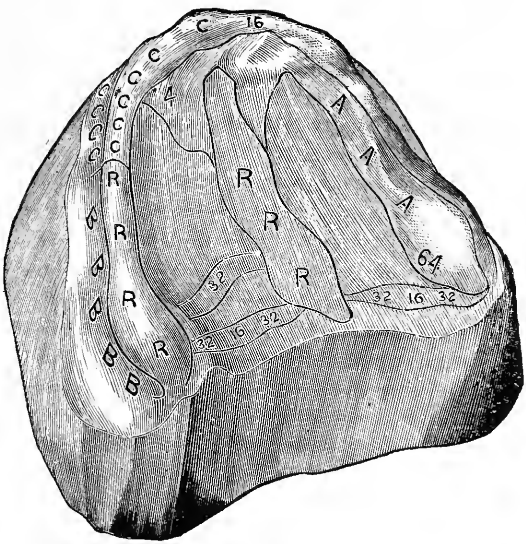
is a gauze one, a perforation or imperfection in the gauze.—Thos. Fletcher, in ITEMS OF INTEREST.

136. **Artificial Dentures.**—To secure good results in an artificial denture, a correct impression is first in order and first in importance. Plaster of Paris is, in our estimation, the only material with which a normal impression can be obtained. The various other materials used for the purpose force the muscles and soft tissues out of position, resulting in an inaccurate cast. Having secured a normal impression—the negative from which a positive is to be obtained—it should be considered as representing merely the outlines; the conditions to be noted after a careful study of the parts. With the patient in the chair and the cast in hand, the conditions may be indicated by a series of characters and figures penciled on the cast. For instance, the thickness of the tissues may be represented by figures 64, 32, 16, 8; the sixty-fourth, the thirty-second, the sixteenth, and the eighth of an inch in thickness. F, will indicate flexible; R, rigid, etc. With such a record an intelligent idea can be formed of the requirements in the particular case, and the necessary modifications will be easily comprehended and accomplished; the adaptation to the hard and soft, rigid and flexible, parts secured; the pressure obtained just where wanted—most in the soft parts, and least in the rigid. In order to trim a cast judiciously, one must have a thorough understanding of the individual mouth. A very important consideration is to so conform the plate to atmospheric pressure principles, that in its use the soft parts of the mouth will be moulded by the denture. The movements of the tongue and the direct pressure of the lower jaw contribute largely to bring about this result. The fact that the mouth does thus conform to the denture shows the importance of a careful preparation of the cast, in order that pressure may be brought to bear where it is most efficient and least distressing, and to secure atmospheric pressure in establishing adaptation and retaining the plate.

The surface of the plate should always be finely finished;

a rough and uneven surface prevents nice adaptation, and is unclean and unhealthy. With air or any foreign substance between the denture and the surface of the mouth covered by it, perfect contact is prevented. If both rubber and celluloid plates were more highly finished before insertion in the mouth, there would be less complaint of these vegetable bases for artificial dentures.

At the level of the sea the atmospheric pressure is said to be fifteen pounds to the square inch, but no such amount of pressure is required to retain a properly fitting artificial



denture. The saliva or fluids of the mouth are also of great importance in retaining a denture in position. If the plate and mouth were made perfectly dry, it would not be easy to secure such adaptations as would be required to hold the plate in position. The utility of the atmosphere is not, however, fully demonstrated in the retention of a plate till an air-space is created by means of an air chamber. This air-chamber should cover at least four-fifths of the palatine arch, and include certain parts of the aveolar walls. With this provision and a judicious trimming of the plaster cast on

the outer portion of the alveolar ridge, a large part of the denture is made to act as an air-chamber, and this should be understood as but a temporary means in assisting the mouth to conform more readily to the denture; the result will be vacuum by complete contact, which does not take place till all the air is excluded, and the air-space filled up by the mouth conforming to it.

To insure a comfortable adaptation, the pressure must be so equalized that, as the alveolar ridge recedes, undue stress will not be brought on the hard palate. For this reason an air-space, covering almost the entire surface of the palatine arch is desirable, as thus the pressure is better distributed and brought to bear directly on the alveolar ridge, where there will be the least danger of injuring the mouth, and thus avoiding the riding or rocking of the plate on the hard palate. The conventional air-chamber, with its acute angles invariably placed on the most rigid portion of the hard palate, soon outlines itself in the tissues, demonstrating a failure to properly utilize atmospheric pressure, and injuring the mouth by inducing absorption unnecessarily.

The illustration is an exact copy of a mouth for which I am now preparing a set of continuous-gum teeth. The conditions may be indicated by letters A, A, A, 64, 4, meaning that within these outlines the tissue is about the sixty-fourth part of an inch in thickness at one end and one-fourth of an inch at the other; R, R, R, very rigid; C, C, C, 16, the one-sixteenth of an inch in thickness; B, B, B, very sensitive to pressure; 32, 16, 32, mean parts of an inch in thickness. On the side A, A, A, a large piece of the process had been torn away in extracting the first molar, which accounts for its peculiar condition.—C. H. Land, in *Cosmos.*

137. **Insertion of Impression Tray.**—The insertion of the tray in taking an impression may seem a trifle to the operator, but is frequently not so to the patient. Few lips will admit an impression-tray direct without an amount of stretching, at once inconvenient and painful; and, in some cases, to secure a correct impression without subjecting the

patient to serious discomfort will require no little care and expertness on the part of the operator. Unusual width of the jaw is not infrequently associated with a contracted commissure, and, in addition, the muscles of the mouth may be rigid and unyielding. Another difficulty is in the common attempt of the patient to open the mouth wide in an effort to assist the operator. The patient should be directed to guard against this by allowing the jaw and the lips to be entirely under the control of the operator, who, standing to the right of, behind and over the patient, should present the tray obliquely to the mouth; one side resting against and pressing outward the corner of the mouth, while the opposite corner should be extended with the first and second fingers of the left-hand; the tray should then be passed in with a rotatory movement to bring it in line.—Dr. J. W. White, in *Cosmos.*

138. **Perfect Plaster Partial Impressions.**—To take an accurate impression of the mouth for a partial upper set of teeth, smear plaster over the roof of the mouth with the finger; take a string about one foot in length; tie the ends together; put the tied end of the loop in the plaster on the roof of the mouth, and add more plaster to thoroughly imbed the knot, leaving the loop of string hanging down. In placing the plaster in the mouth, care should be taken to have it come full half-way over the grinding surfaces of molars and bicuspids and cutting edges of the front teeth; then trim the plaster and varnish the trimmed surfaces. The plaster should be so trimmed that it will fill up fully one-half of all spaces between the teeth; then cover all the remaining surface of the mouth and teeth with plaster, being very careful to have the teeth well covered and spaces filled in, putting on plaster for the buccal and labial surfaces. When set, the plaster impression readily parts where it has been varnished, the palatal portion is dislodged with the help of the string used, and the pieces are then placed together and model made. If a tooth is irregular, use modeling compound about it and trim suitably; then apply the

plaster. When removing, it breaks where joined ; then remove compound, place in position in the impression, and pour the model.—J. G. Templeton, D.D.S., in *Ohio Dental Journal.*

139. **To Remove Impression from Tray.**—Directly after removing the impression from the mouth, trim away all surplus plaster which will bind the impression to the tray, place a Bunsen burner on the center of a folded towel, and over the flame of the burner move the impression, cup down, till it pops loose. This result is effected by the generation of steam between the tray and the impression, and is accomplished in less than a minute's time. The impression falls off unbroken on the folds of the towel.—Dr. F. E. Battershell, in *Ohio Dental Journal.*

140. **To Finish High-arch Plates.**—Dr. M. D. Bush, Canton, uses a tuft of cotton twisted on a screw mandrel. It makes an effective finisher, carries the powder well, and adapts itself to the surface of the plate. It is particularly useful in cases of high and very narrow arches.—*Ohio Dental Journal.*

141. **Articulating Artificial Teeth.**—In articulating an upper set to lower natural teeth, the impression is taken with plaster and model made from it in the usual way; then soften modeling composition, flatten it out till it is about a quarter of an inch thick, press it on the model while warm, cut and trim to make a trial plate on which to take the bite, being careful to have it fit the model accurately; melt a little wax around on the ridge, then press a roll of softened wax so that it covers all the alveolar part of trial plate; the wax is then trimmed to give artistic or natural expression, which may be changed after trying in the mouth and a satisfactory expression of the features obtained, always being careful to have the wax show the desired length of the front teeth. The wax should be so cut on its articulating surface that all the lower natural teeth will strike it at the same time when

tried in the mouth; then remove and soften articulating surface of wax slightly over a flame and replace in the mouth, and do not let the patient bite in it till you have the head drawn well back, so as to put the anterior muscles of the neck to a full stretch; then have the patient bite a little on the wax, to get a slight impression of the cutting edges and cusps of the lower teeth. Next, take an accurate impression of the lower teeth, from which make a plaster model that will fit in the slight impressions of the teeth made in the bite taken; then place in any good articulator that can be set to maintain its relative positions (the best articulators are those made of plaster). Now remove the bite and you are ready to set the teeth to a correct articulation, and if all has been carefully done, the teeth, when finished, will properly articulate in the mouth without any subsequent grinding.

For a double set (upper and lower) make plates of modeling composition to take the bite on, putting a piece of stiff wire in the lower to strengthen it; wax the ridges as previously described; place a roll of softened wax on the upper trial plate; place the lower plate in the mouth, being careful to see that it is in proper place, and hold it there while putting in the upper plate with the wax on it. Do not allow the patient to bite till the head is drawn back as previously directed; then have the patient bite and keep the jaws closed; press the wax well against the trial plate, and mark the center or median line; then have patient close the lips, and with a small, straight instrument mark the height of lower lip; this mark should extend from one angle of the mouth to the other, and will show the length of upper lip, also serves as a guide in making the wax expression plates or models. After taking the bite, place the plaster model in the trial plates and slightly fasten in any articulator. You are now ready to make the antagonizing models. The writer's method of doing this is to press a lump of soft wax on the upper model in such a way that an accurate fit is obtained of all the parts the artificial plate is to cover; then trim, first the height the rim is to be, leaving it as high as

possible over the region of the canine teeth, frænum, and over the bicuspids; also have that portion over second molar as high as the model will permit; then cut the wax to the desired length for the teeth, taking as a guide the mark made on the bite, to show the line of lip closure. Next, trim labial and buccal surfaces, the general contour of which when trimmed should conform with the outer portion of the alveolar ridge of lower plaster model; then cut a portion of the wax out of the center, leaving an articulating surface all around the ridge, which need not be so wide in front as at each side. We now have the wax, antagonizing model and plate all in one piece. The lower antagonizing model is easily and quickly made; having upper wax on plaster model, oil its articulating surface, and press a roll of soft wax to the ridge of lower plaster model; then press upper model down against it as far as the set of the articulator will allow; trim the lower wax to the contour of upper wax, and we have the antagonizing models ready for trial in the patient's mouth, which we always do before proceeding further, carefully noting and making any changes thought necessary to give a natural expression to the face, being very particular to have the articulating surfaces come together at the same time all the way around, and also that our models give the *proper length* to the *lower third* of the face, *which must be in exact proportion with the upper two-thirds.*

After being satisfied that we have obtained the best results possible with the case, we mark the medium line, and make other marks across the line of closure; so that we can put them together again in the *same* position out of the mouth. Now an exact articulator becomes a necessity, one that will not vary a hair's breadth, and to get that we must make it of plaster, using our antagonizing models to get the proper relation of its parts. We now scarify back end of the plaster models, and place the upper antagonizing model on upper plaster model; fill the concave space between articulating surfaces with wet paper; spread plaster on a piece of glass; set upper plaster model in the soft plaster, and build the plaster extension; which should be about two

inches in length from back end of model, and built as high as the articulating surface of wax antagonizing model. Now then trim plaster and cut two V-shaped grooves, crossing at right angles in the center of extension; coat lightly with thin varnish and oil, or, what is better, apply a coating of soap with camel's-hair pencil. Next place lower antagonizing model in position, as indicated by marks made in the mouth, and fasten together with two or three small staples, cut from tin plate; then put lower plaster model in its place, make the plaster extension attachment and trim to upper extension. When plaster has well set, separate the parts; then place lower antagonizing model on lower plaster model; fill inside space with wet paper, not allowing any of it to cover articulating surface; soap the extension and spread plaster over all, which should be about one-fourth of an inch thick on articulating surface and a little thicker on extension; then trim to the contour of the wax, and the center line marked to correspond with that on the wax; we now have what we call a lower articulating plate, which has an impression of the articulating surface of lower antagonizing model, against which the lower teeth are to be set; following the order of nature, we always set the lower teeth first, setting the front teeth a little in, about a line and a half from front edge of lower articulating plate, at the medium line, having the cuspids and all those back of them come nearly to the edge of articulating plate; then the upper teeth when set will not stand out further than the contour of the upper antagonizing model. After setting the lower teeth the lower articulating plate is laid aside, and the upper plaster model is placed in position; the upper teeth articulated to the lower ones already set.

If the plates are to be of vulcanite, saw off the articulating extensions, when ready for flasking. If all these directions are carefully carried out, the teeth, when finished, will articulate in the mouth perfectly *without any grinding* to make them come together; such has been our experience with this method for twenty-five years. The best results; in fact the whole science of constructing double or upper and

lower sets of teeth, lies in the proper adjustment of the antagonizing models; to do this artistically, a knowledge of the physical law of forces is absolutely necessary; hence, when preparing these, the dentist must always keep in mind that they should be made so that when the teeth are set in accordance with them, *the force of mastication should come against the center of the alveolar ridges*, in order to have them remain firmly in place when in use.—J. G. Templeton D.D.S.

142. **Obtaining Even Plates.**—The ordinary way of bending up wax by warming and pressing it on the model with the thumb, is open to the objection that the thumb, being harder and more unyielding than the soft wax, tends to press it very thin over the rugæ, and not at all in the interstices of the teeth. This may be avoided and the rugæ brought prominently and evenly on the surface, by heating some modeling composition in water, rendering the wax pliable by dipping it for an instant in the water with the composition, then placing the wax roughly in position on the model, and with the soft composition knead it well down in place; on parting the composition from the wax, the latter will be found to represent on the surface almost a duplicate of the surface of the model.

The composition has, of course, a tendency to stick to the wax, if too hot. Should this give trouble, dry the composition first, and smear the surface of it with a little French chalk. In subsequently setting up the teeth and preparing for the flask, care should be taken that the surface of the wax is not cut or scratched; when finally ready for the flask, the surface of the wax should be polished by lightly rubbing it with the finger tip or cotton wool.—*British Journal.*

143. **To Make Gold Plates Without Dies.**—Dr. W. G. Browne describes his greatly simplified method of making gold plates with rubber attachments without dies. He uses No. 30 gauge pure soft gold, burnishing it directly on the plaster model, and stiffening by soldering a platinum wire all around the pieces, and flowing solder over to make a

smooth surface. In a lower parital plate, when the eight anterior teeth were in position in the mouth, he makes the portion of the plate extending across the anterior teeth of a double plate of gold, with bits of platinum between the two gold plates, soldering the two plates only at the points where he placed the aluminum pieces. The rubber covering the lingual surface of the piece entering between the two thicknesses of gold made a very strong piece, without swaging or using dies in its construction.—Dr. W. G. Browne, in ITEMS OF INTEREST.

144. **Model Plates for Partials.**—In mounting anterior teeth on partials, where they are to be mounted without gums, it is very necessary to have a strong, rigid material for the model plate, that can be made thin, and yet hold the teeth permanently in place, no matter how close they are made to hug the natural gum. I have been using the red *vulcanite gutta-percha* for this lately, and find it the best for the purpose. The model should be *hard*, then rubbed over with soapstone, the gutta-percha softened in water, pressed to place, and held till set. If properly worked, the plate will come out ready for sandpaper and polish.—Wm. H. Steele.

145. **To Restore Color to Black Rubber Plate.**—Often after a black rubber plate is polished it presents a very inferior color, a grayish-black. This may be removed by the application of carbon bisulphide. Dampen a cloth with the solution, and rub the plate vigorously wherever required. It is well to wash the plate thoroughly after the use of this solution, as there might otherwise be a tendency to nausea. —S. Burns, in ITEMS OF INTEREST.

146. **Care of the Vulcanizer.**—The occasional reports of dental vulcanizers, accompanied as they are by damage to property, and imminent risk of personal injury, make the question of their avoidance one of considerable interest. Their entire prevention is an impossibility, so long as the

management of the vulcanizer is entrusted to boys, or persons who know nothing, and care less, about the properties of steam, or the rules on the observation of which depend the safety and proper operation of the boiler committed to their charge. It is seldom, that an inquiry into the circumstances attending a vulcanizer exploding, fails to elicit the fact that it was the consequence of gross carelessness or ignorance. The safety apparatus is often deliberately put out of order, and all the chances of an accident which may happen from a few moments' forgetfulness are taken by the operator, who probably knows about as much of the properties of steam as a Christian scientist does of human physiology.

It is proposed, in the present article, to touch on a few points of the proper care of vulcanizers, and more especially to show how and when they become unsafe by use. It seems to be the opinion of some dentists that a vulcanizer should remain good indefinitely; but often one returned to the maker, for supposed trivial repairs, is found to be in such a condition that its further use would be attended with great risk.

Vulcanizers, as they leave the manufacturer's hands, may be depended on as strong enough to withstand a pressure three or four times as great as that incident to the vulcanizing process. No house, having any care for its reputation, can afford to put out one unless it is of undoubted strength. They are also provided with ample safeguards, by means of which they will be relieved from over-pressure, if it should occur. But no such appliance can be made that cannot be—either ignorantly or designedly—put out of order; neither can a vulcanizer be made so strong that it will be safe under any attainable pressure. It must be carefully and intelligently managed to insure safety.

Vulcanizers are gradually weakened, and eventually destroyed, by corrosion and strain.

When the sides of the vulcanizer are weakened by corrosion to any great extent, the fact is easily ascertained by tapping them lightly with a small hammer. If the metal is thick and strong, it will be elastic, and the hammer will

rebound from a light blow; though, of course, copper would yield to a heavy one. When the metal is quite thin, the sensation will be as though the blow was delivered on lead. There will be little, if any, rebound, and the metal will be driven in and dented by a very light blow.

Corrosion occurs to some extent from exposure of the vulcanizer to air and moisture. Indeed, it is by no means sure that the greater part of it does not thus take place. It is good practice to clean the vulcanizer pot, and wipe it dry, before laying it away after use.

Another cause of failure in vulcanizers, one which happily occurs but seldom, is the cracking of the metal near the corner of the bottom. As the bottom is usually covered with scale, it may crack, and even give way, before the existence of any defect is suspected. This fact forms another argument for keeping the vulcanizer clean, as before mentioned.

When a screw fastening like that of the Whitney vulcanizer is employed, mischief is often done by the inordinate use of black lead or soapstone powder on the packing joint, and incidentally on the screw. The particles of which either of these powders are composed are hard enough to wear away metal if placed between two rubbing surfaces, and in consequence the screw threads of vulcanizers are sometimes so worn that they have not sufficient hold on each other to retain the cover, which, on some fine day, mounts to the ceiling, and disappears in the lath and plaster, much to the surprise and disgust of the owner.—George B. Snow, D.D.S., in *Dental Advertiser.*

147. **Use of the Blow-pipe.**—Dentists who come to our school often remark that they have found it difficult to use the mouth blow-pipe, but very soon learn to use it successfully with proper instruction; and the new beginner can succeed better with it than with the automatic blow-pipe.

The primary difficulty lies in the instrument itself. The blow-pipes sold at the dental depots, and which are used universally, are made for jewelers' use, who use low grades of

solder and do not have to heat up and keep hot plaster investments. The dentist using 18-, 20- and 22-karat solders, and needing to keep hot investments, needs a larger blow-pipe.

The mouth-piece of the small pipe has to be taken inside the lips, and the effect to use it tires the muscles. The large mouth-piece is pressed against the lips. The aperature at the other end needs to be sufficiently large to take in the large flame of a proper soldering burner, either gas or alcohol.

For many years I constructed a soldering burner by winding fine wire over the end of a gas-pipe, to the size of a hen's egg. This gave a flame like the wick of a lamp. A few years since Dr. McIntosh, of this city, constructed for me an excellent burner, consisting of a brass bulb filled with fine wire gauze. These can be screwed on to the end of the ordinary gas-pipe, which should be of two twelve-inch pieces with a universal joint, so as to be placed in a convenient position on the bench.

The blow-pipe must be held in such position as to control the entire flame, always remembering that the flame must be made *blue*, or sufficient heat will not be secured. Do not blow *too hard*, only enough to control the flame as it comes from the burner. In order to keep a steady blast, do not allow all the air to escape from the lungs, but keep the *diaphragm constantly distended;* and using the cheeks for bellows and the tongue for a valve, the process is an easy one.

A blow-pipe, such as I have described, is furnished by some of the dental depots, and is known as the "Haskell blow-pipe." If the curved end is more than two inches long, cut it off to that length, and see that the hole is one-sixteenth inch in diameter.

The solder should be cut small, and laid where it is needed, so as not to have to "draw" it from one place to another. The borax and solder should be applied before the case is heated up, so there may be no delay when ready for the blow-pipe. Of course, I am referring to the soldering of teeth on plates or bridges. Heat up the case over a large gas-burner as hot as possible; a convenient soldering pan for such cases can be made of sheet iron; a half circle,

three-inch diameter upon the straight side, with rim three-fourths inch wide; handle, twelve inches, fastened diagonally to the straight side.

Place the case so the heat shall be thrown from front to rear, in order to heat the plate first, so it shall be hot as the backings when the heat is thrown upon the solder.—L. P. Haskell, in *Ohio Dental Journal.*

148. **Swedging with Screw Press.**—I think for the past eighteen years I have never struck a blow on a gold plate to swedge it. The press I use is made of wrought iron, except the base. It is made with a screw of steel, engine-turned. In swedging a gold metal plate you cannot be as sure of results in any other way as with the press that carries it home without rebound, there being no resistance. On the last pressure place a thin piece of cotton cloth underneath your plate, as your first work will expand your counter-die, and the cloth makes up for expansion and makes a perfectly tight counter-die; your plate will be driven home, and a perfect adaptation the result.—Dr. E. G. Leech, in *Odontological Society of Pennsylvania.*

149. **Clasps on Rubber Plates.**—The use of clasps of gold on rubber plates, when properly made, I most heartily recommend. My method is to make an impression of the tooth or teeth to be clasped, pour the impression with Mellotte's or other easy flowing metal; this, when separated from the impression, will give you the tooth to be clasped, in metal; over this metal die bend your clasp until it fits the largest diameter; now remove and bed or push the clasps in charcoal, or pumice and plaster, about half the width; now solder a good strong lug on this band by laying the lug against the band, using at least 14-karat solder; remove and place the clasp on the tooth in the mouth; see that it does not bear upon the gums; remove and flow a little hard wax—a little resin added to beeswax will make it—on the inside of the clasp; and while warm place it over the tooth; be sure it is placed and held where you want it to remain in

the plate; *on this point your success or failure depends, the clasp must remain immovable when the impression is being taken;* now you are ready for the impression. I take it in plaster alone; many use stiff wax first. Cut out around the clasp, fill with plaster and reinsert. I prefer plaster alone; this method applies to all parts of the mouth. It is simply incredible what this method will occasionally do, especially on lower plates.—G. A. McMillen, in *Review.*

150. **Preventing Odor in Casting Dies.**—The odor arising from casting a die in sand mixed with oil can be overcome by placing over the molding ring a tin can, the vapor of oil is condensed by the cold can, and prevented from escaping in the room.—*Dental Tribune.*

151. **Plate Springing in Swaging.**—Sometimes in swaging a partial or full plate there will be a spring in the plate, which it seems almost impossible to get out, and after spending half a day in vain to remove it, one is often tempted to throw it away and commence anew. Should you ever get a spring in a case of this character, all the pounding you can give it in a day will not remedy it. I treat such cases in the following manner: Take the plaster model which is used in making the dies, and set the plate on it, and in as nearly a correct position as possible, and on the side of the model, cut some small grooves at different points. Force the plate down in the face of the model, in the desired position, and at the same time pass over it a piece of copper wire (size 21 of standard gage), carry the ends of this wire around the model, bringing them together and twist them until the wire binds down the plate to the model. Use as many wires as are necessary to bring down the plate all around. Then heat the plate to cherry-red, and allow it to cool slowly. After removing the wires, you will find that the spring has departed. This same method can be applied to plates with teeth, by investing in sand and plaster after having applied the wires, and then slowly heat the mass upon a lamp or furnace before using the blow-pipe.—Dr. Bartlett, in *Archives.*

152. **Mending Cracked Plates.**—In repairing a cracked plate I use what is known to jewelers as ear-ring wire (brass wire gold plated), and after proceeding the usual way till about to pack in the new rubber, when I make a hole sufficiently large to receive the wire on each side of the crack, bending each end of the wire at right angles, placing it through the holes, sometimes through the plate, cutting off the ends after vulcanization.—Dr. Abbott.

153. **To Prevent Borax Frothing.**—When soldering, the addition of a minute quantity of gum arabic rubbed up with borax and water on a slate will prevent the borax from frothing.—Carl J. Gramm.

154. **Burnishing Aluminum.**—A mixture of equal parts of olive oil and rum is recommended for the burnishing of aluminum, after which it is buffed.—Dr. Haskins, in *Review.*

155. **To Line Plates with Black Rubber.**—Plates can be lined with black rubber, without its showing through the red, by dissolving black rubber in chloroform, and painting the model two or three good coats. Wait a few minutes before packing other rubber on the black.—G. A. Yant, in *Ohio Dental Journal.*

156. **Celluloid Blanks for Countersunk Teeth.**—Dr. M. H. Cryer devised the filing of notches in celluloid blanks as in Fig. 1, when the countersunk tooth-crowns are to be mounted in this material. The suggestion is a practical one, and obviates the defects which I have found to attend the mounting of these teeth in the usual way, for the confined air in the cups commonly prevents the celluloid from entering far enough to more than half fill them, and thus the pins are left untouched. As a consequence one is disagreeably surprised by the teeth coming off in the process of finishing; or, what is worse, by the return of the patient with one or more detached teeth in the hand. This has not occurred

since trying Dr. Cryer's method, and an experimental case from which the teeth were purposely broken showed all the cups or countersinks perfectly filled, as seen in the cut, Fig. 2, copied from that case. That was a demonstration of the effectiveness of the plan which provides for the escape of

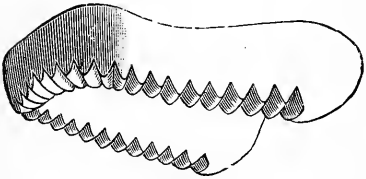


FIG 1.

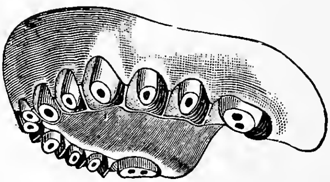


FIG. 2.

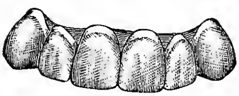


FIG. 3.

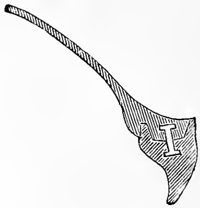


FIG. 4.

the air, while the plastic promontories enter the countersinks and surround the pins, by means of which the teeth are firmly secured to the plate, on which they thus have so strong a grip that the labial necks of the crowns may, for conformity to the adjacent natural teeth, be quite uncovered by the celluloid (see Fig. 3), and the mount be yet a strong one, as is evidenced by the section through plate and crown, Fig. 4. In this instance the short celluloid festoons (see Fig 3) lie close on the gum, which they much more nearly resemble than the dark vulcanite.—H. S. W., in *Cosmos*.

157. **Shaping Plates When Muscles Interfere.**—The very fact that the tissues and the muscles tend to drop toward the maxilla after it has become absorbed and occupy these spaces, makes it ofttimes quite a difficult thing to retain that place for any length of time. I think this is largely due to the fact that dentists do not shape the borders and the buccal and labial surfaces of the artificial dentures properly. We

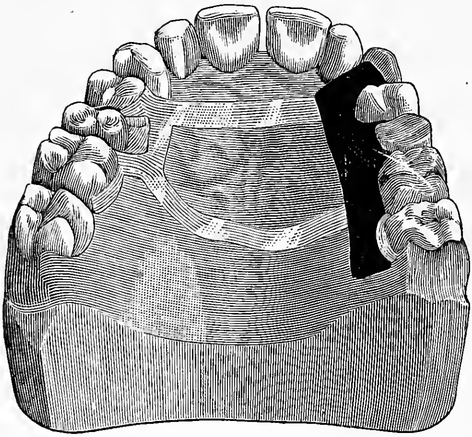
find in almost every instance in which artificial dentures are constructed, instead of taking the natural shape of the original gums, that they take or assume a shape that is entirely unnatural—a bulging out, if you please, of the surface of the plate, both anteriorly or along the border. You take any lower denture and insert it in the mouth, if the muscles have been in the habit of dropping in that surface instead of hitting the plate, the tendency of the muscles is to drop underneath the plate and lift it up; whereas, if it had a depression at that point the muscles would fold in on it and tend not only by their influence in holding it in position, but would produce an atmospheric force that tends always to hold a plate—because the air does not extend beyond.—C. S. Case, in *Dental Review*.

158. **To Prevent Air-holes in Flasking.**—When filling the upper ring of a flask, in repairing vulcanite work, it will generally be found that a large air-hole is frequently formed in the plaster just poured in. This is caused by the plaster in the lower ring being dry, and the air escaping from it forms the air-hole. To avoid this, after the case is invested in the lower part of the flask, trimmed and varnished ready for the investment of the upper ring, grease the whole surface and place in a bowl of water while you mix the plaster for the upper ring. By this manipulation you will avoid what at times is very tantalizing in repair cases. The same procedure may be observed for new as well as repair cases.—Chupein, in *Dental Office and Laboratory*.

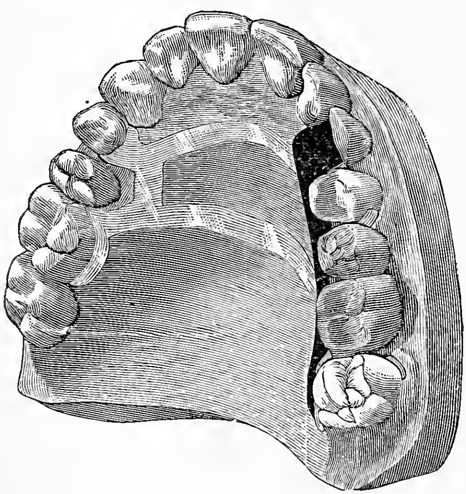
159. **Skeleton Plates.**—I send you herewith a sketch of a skeleton plate that I made a short time ago, it being the second one that I have made, and as they proved so satisfactory to both patients and myself, I concluded that I would be justified in giving the profession the benefit of my method of making such plates. The cuts are good illustrations of the last plate made.

The patient, a lady, extremely nervous, and having lost the left cuspid, second cuspid and first molar, applied to me

to have them inserted. Having had some experience with her, I feared she could not tolerate a plate in the roof of the mouth, and I did not deem it advisable to attach the teeth by banding, hence I concluded to make the skeleton plate. The process is very much the same as making an ordinary gold plate. After you have your dies, cut a narrow strip of gold or platinum plate large enough to form a saddle where teeth are to be inserted, extending up on the buccal surface of the gum as high as you want it to make a finish, and inside on the palatine surface, just far enough to solder your stays for fastening the teeth on with rubber. Next take two strips of heavy spring gold, about No. 22 thick, and 3-16 to $\frac{1}{8}$ inch wide, lay each one on your zinc die



Full view of palate surface.



Diagonal view from left upper hand molar.

NOTE.—The dark shade at the base of the first molar on the buccal side is intended to show where pink rubber has been used to meet the natural gum. The light shade represents the gold of the skeleton plate as well as the clasps. The second bicuspid on the left side of the cut represents a gold crown, and is, therefore, not used to clasp to.

from one side to the other from the teeth you intend to clasp; then swedge them up, each one separately; then place gold saddle and both bars on zinc in their proper places; swedge again, then by holding one end of one of the bars in its proper place on the saddle with tweezers, solder it there; the other bar the same way; then the ends of the bars together, or to a saddle on opposite side, if there be one; swedge lightly again. Now place it in the mouth, so that the bars fit to roof of mouth and the saddle to the gums, if all is right. Now take an impression with plaster if you can, or composition if you *must*.

After obtaining cast, cut and fit your clasps and solder in the usual way. After the clasps are on, place the skeleton in the mouth again, take the "bite," articulate, grind on your teeth, try in the mouth again, to see if there is any doubt about the bite; if all right, invest and vulcanize, finish up and polish, and you will have the satisfaction of having done a neat piece of work and given your patient the *best* appliance that could be made, not *excepting a bridge*. Now, I have not written this for the benefit of those who have made these same skeleton plates for the last ten, twenty or thirty years and kept it to themselves, but for those who may wish to know that such an appliance can and has been made, and has proven a success.—Dr. H. H. Gantz, in *Dental Office and Laboratory*.

160. **Proper Fitting of Clasps.**—The metal should be platinized gold only, without any lining of pure or twenty-two-karat gold soldered on it next to the crown. The metal should be loosely fitted to the crown on the plaster cast, and afterward fitted in the mouth directly on the tooth and made to touch in at least four places. It should not fit accurately every inequality of the surface.

If a clasp fits minutely all the surface of the crown, it makes of the minute space between the crown and clasp a capillary surface, and keeps the mucous secretions, as well as the fine food, forever in contact and with no space for circulation of the saliva. Whereas, if the band touches but a few

places on the tooth crown, it will rest just as firmly, if it has been well fitted in the mouth and allowed to take its own position when tried on the crown.

Capillary power made by surfaces very closely proximated is the surest means of producing caries. Where a space is left; the points that do touch are in absolute contact, and, aside from a slight wear on the tooth, the surface cannot decay as when there is an actual and close fitting. If made of pure soft gold, there would always be danger.

The width of clasp should be as great as can be made, and to steady the plate without grasping it firmly.

Next to the clasp in importance is to know where it should be soldered to the plate; and on which side of the crown to allow it to go on and off, where the crown is very much out of perpendicular. The gold amalgam does not discolor to any considerable extent.

I prefer to allow the edge of the filling to stand outside of the clasp and not rest underneath it, at the top or next to the grinding-surface; and I do not hesitate to use the corundum wheel on the enamel where slight projections interfere with a clasp resting securely. No harm can result where the cut surface is polished. If caries should occur at any point thereafter from accumulation of food, I should fill with amalgam. But this need not often result when cleansed after each meal.

Each case must be thoroughly studied after the plaster cast is made, or the result will not be satisfactory. The points on the clasp and plate where the plate is soldered to connect them *are the vital parts*, and, unless judiciously chosen and the bar made of platinized gold wire and the base plate of two pieces of gold soldered together to stiffen it, and the clasp of proper width and thickness, the strain placed on the mechanism will break it. The bar holding the clasp and plate must always be on the side of the tooth where there will be least resistance. Take a second inferior molar that has tipped forward very much and also inclines to the tongue. Here the soldering should be done as far back on the buccal side of the clasp as can be accomplished. Then

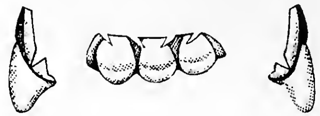
the spring of the clasp is not needed for the buccal side, but for the anterior and lingual sides, where projecting from a perpendicular. If soldered from the lingual side, it would be impossible to get the clasp on or off.

In the upper cases it is generally the reverse, though there are many exceptions, and no rigid rules can be laid down. Each one must be especially studied, or no good results. Nor can you rely on fitting plate and clasp to the plaster-cast and soldering from that—no, never do it! Take the trouble to take impression of both plate and clasp in the mouth, and then solder from that.—W. G. A. Bonwill, in *International Journal.*

161. **Flexible Rubber Plates.**—Herewith I give you the result of a little experiment in thin, flexible rubber plates: Wax up the case in the usual manner. After trying in the mouth to see that it is correct, fasten the outer rim solidly to the cast with wax, then cut out the wax from palatal portion and burnish tea lead in its place, letting it come up well around the teeth. Flask as usual, and after washing out the wax and removing the lead, apply dry heat to the case to dry the surfaces, then paint with liquid silex; the heat of the case will soon dry the silex. Make a good large gate at heel for surplus rubber, and pack the same as for thick plate, using black rubber for palatal portion. Care must be exercised in cutting away surplus, not to split the thin rubber. The polishing can be done with brush and cotton wheels. No scraping or sandpapering necessary. This makes a much pleasanter plate to wear in the mouth, and gives better satisfaction to the wearer.—W. G. Stowell, in *Review*.

162. **Replacing Pinless Gum Sections.**—We frequently have a plate brought in, with a front block broken off; the section being all perfect, but minus part of the pins, or, perhaps, all of them. I have found the following method very useful and a success in such cases: Put a rubber corundum disk, style D, in the engine, and cut channels in the old block, as shown in the cuts; keep the disk well wet; and be

governed in depth of the channels somewhat by the shape and amount of material in the tooth, or section. Now cut away on the plate for the new rubber, deep enough so that it will easily reach, and flow in the channels; replace block on



the plate, wax up, flask, pack and vulcanize as usual.—William H. Steele, D.D.S., in *Ohio Dental Journal.*

163. **Soldering Small Pieces.**—As the saving of time is an object to most dentists, I will describe a process of soldering small pieces of gold work, which, though not new to all, may be of service to many. If you have a plate with two or three teeth which you wish to attach by means of solder, back the teeth and fasten in position by means of hard wax; then take molding-sand and wet it thoroughly, till it is of the consistency of soft putty; place this on your soldering block, press the plate in it, and bring the sand well up around the teeth. Now take your blow-pipe and throw a broad, gentle flame around the outer edges of the sand, taking care not to let the flame touch the plate or teeth till the water is driven off and the wax begins to blaze; then direct the flame on the wax and burn it off. Scrape well the parts on which you wish the solder to flow; then place on the solder and borax, and proceed as usual. Partly fill a sauce-pan with water, and place it over a gas or oil-stove, and when it boils hold the case, wrapped (investment and all) in a cloth, over the steam for half a minute close to the water; then drop it in, remove and take out the piece. Clasps and small regulating pieces are held together and soldered by this process very quickly.

I have yet to crack my first tooth by soldering in this manner, which, I think, is due to the fact that the expansion by steam heat is more uniform than by dry.

Sand which has been used for molding purposes is dangerous to use, as particles of zinc or lead may be present, and thus become alloyed with the gold.—J. Bond Littig, in *International Journal.*

164. **Uses for Mellotte's Moldine.**—I have found moldine very useful in repairing gold and silver-plate and bridge-work. The tooth or teeth and plate can be invested by molding the moldine over and around the parts to be soldered, and the work at once heated up, thus saving much time and trouble usually resulting from the use of wet mixtures as investients. Impromptu crucibles for small melts of any kind can also be made of moldine. A thick gold collar or ring, or cross-bar, or any small article, can be cast in a moldine mold, which is easily and quickly formed from a suitable model, and is ready for use as soon as made.—F. B., in *Cosmos*.

165. **Rubber Head for Riveting Hammer.**—Slip a rubber tip, such as is used on the little glass drop tubes, over point or face of your small riveting hammer, tie it fast with a piece of wire twisted round; you can hammer away at a plaster model without defacing it, when fitting in an air-chamber pattern or any piece of gold, or other metal, to the model.—D. V. Beacock, in *Dom. Jour.*

166. **Watt's Metal Cusps for Short Bites.**—I saw recently in THE ITEMS an article by Dr. Ticknor on this point, and will give my method of making them: Cut out a piece of thick base-plate wax, as large as will go in a Watt's flask; warm a piece of thick glass and lay the warm wax plate on it; press in it plain single bicuspids and molars of the sizes and shapes desired, as close together as practicable all over the wax. Now, with a warmed spatula make a little channel from crown to crown, for gates; place bottom half of the flask on the glass; slightly oil the wax, and fill the flask with Teague's Impression Compound. When set, remove the wax; varnish and oil the surface; put on the other half of the flask and fill with the compound. Separate when set, and with a sharp, straight-edged plaster knife remove all the projecting cusps and channels from the first half of the flask; close and clamp; dry out all moisture, and pour with Watt's metal. Old tooth-pins can be put in by setting them in the

plaster, opposite the crowns desired, before pouring the metal; or the crowns can be roughened with a graver for attaching to rubber plate. As many as desired can be made from one mold.—William H. Steele, D.D.S., in *Ohio Dental Journal.*

167. **To Duplicate Models and Impressions.**—Take printers' roller composition, melt in a water-bath till dissolved. Grease the model slightly with lard, and place it the same as if to mold a metal die, cover with a metal ring, (a tin can opened at both ends will do) and pour the melted composition over the model. Let this stand over night. By morning the material is hardened and the model can be withdrawn. The composition being elastic it retains its shape, and a hundred models may be poured if necessary. Impressions may be duplicated in the same manner, by using impression instead of model.—J. G. Templeton, D.D.S., in *Ohio Dental Journal.*

168. **Thin Rubber Plates.**—To secure the maximum strength without increasing the thickness of vulcanite plates, it is necessary to make the mold so smooth that the rubber, when removed from the plaster, needs only the brush wheel to finish it. To accomplish this, first saturate the model with water, then dip it in a vessel of clean melted base-plate wax, and lift it out in such a way as to allow the wax to flow off easily. I find that it is best to dip the back of the model downward. The surface of the wax in the vessel should be free from bubbles. If the first dip should not secure a smooth surface, the wax may be peeled off, and the process repeated till it is satisfactory. After which repeat the dipping process till the deposit has the desired thickness. It is well, however, to leave it thinner than the desired plate till after the set is articulated, then after waxing up carefully, so that one more dip will give the desired finish to the base-plate, dip it in water so that the teeth shall be wet before immersing it in the melted wax. The wax deposited on the teeth will peel off easily. Cool the wax, and, with a

sharp instrument, trim around the teeth and the edges of the base-plate, and it is ready for the flask. With a little care the surface of the base-plate may be made as smooth as glass, and the labor of finishing the rubber will be much reduced. A little practice in dipping a model will give one all the skill that is necessary to perform the work quickly and easily.—A. N. Dick, in ITEMS OF INTEREST.

169. **To Remove Teeth From Plate.**—To remove teeth from a rubber plate, lay it teeth down on a piece of asbestos board, then hold the board over a flame till the rubber softens.—*Odontological Journal.*

170. **Manilla Paper for Swaging.**—Thin manilla tissue wrapping paper, about two thicknesses, will be found to answer admirably in causing a metal plate to leave the lead counter die after swaging, and if used in from four to six folds an extra counter die will be unnecessary, its use producing a sharp definition not excelled by either tin or Babbitt metal.—*Ex.*

171. **Three Rules for Articulation.**—Three rules cover essentially the ground. Never allow pressure on the six anterior teeth; never, in full upper plates, allow the pressure to be greater on one side than the other; never allow a second or third lower molar which has projected forward so that its face shows to meet an artificial tooth at that angle, as it will surely crowd forward the upper plate, the same as the meeting of the anterior teeth.

As a rule, a full lower plate is more comfortable and useful than a partial, because the pressure is distributed equally over the whole jaw.—Dr. L. P. Haskell, in *Office and Laboratory.*

172. **Strengthening Rubber Plates.**—After the flask is separated, cut a piece of rolled gold wire, No. 60, to reach the bicuspids on either side, indent slightly with plate shears, and bend so it will lay on top of pins of the anterior

teeth, then soft-solder the wire to the camins if single teeth are used, or to the bicuspid blocks if gum teeth; also, to the central incisor pins if thought necessary. The wire can be used in any place where there is a weak point; for instance, when there is but one tooth, a piece of the wire should be bent to fit closely to the model, and soldered to the pins of the teeth. I anneal the wire and brighten it with powdered pumice-stone before using. Different sizes of wire, 60 to 70, to be had of jewelers.—J. M. Ovenshire, in *Dental Mirror.*

173. **Oil for Flasking.**—It is a useless waste of time and material to varnish and oil a plaster investment, besides, I am sure in almost every case where rubber crawls away from the teeth or pins, during vulcanizing, it is always traceable to the presence of oil. It does not matter if but little is used in the flasking; this little will reach out and cover a good deal of surface, when the flask is heated for closing. When the lower half of the flask is filled, set, and made smooth, wet a small brush in soft water, rub it on a cake of of castile soap till lathered; coat the plaster investment with the soap; put on the top half of the flask, pour as usual.—Wm. H. Steele, D.D.S.

174. **A New Molding Material.**—A nice molding material for making dies, casting plates, and various castings, can be made: Mix pumice-stone with a suitable quantity of glycerin, this material is always ready for use and will stand the heat of melted steel.—H. P. Osborne, D.D.S.

175. **Useful Hints on Rubber Plates.**—Sometimes, particularly with a partial rubber denture, the plate will be as snug as desirable part of the time, but sometimes very loose. To avoid this, before casting your model make the grooves in the impression, caused by the ruge of the mouth, much larger, as in some mouths these vary in size at intervals.—I. Douglas, in ITEMS OF INTEREST.

176. **Soldering Tubes and Nuts.**—In soldering tubes or nuts to receive screws to their attachment, chuck the end

of your lead-pencil in the holes and solder will be kept out. —*Western Journal.*

177. **Imperfections in Metal Dies.**—To prevent imperfections or bubbles in the palatal portion of metallic dies, it is not necessary to dry the mold after it is formed, or to use more than ordinary precaution as to the heat of the metal. I find the best result is obtained when the plaster model is quite thick and the mold consequently deep. This is then tipped forward, raising the back part of condyles to the highest point possible; pouring the metal in at the front slowly, and lowering the mold at the same time till the palatal portion is covered, and the mold filled to the top. I have advised the above in many cases, and have not yet seen a failure.—F. E. Sprague, in *Cosmos.*

178. **A Lathe "Drip."**—Having tried several appliances for keeping corundum wheels wet, all of which were more or less annoying, I hit on the following plan, which may be of service to others: Take a Squibb ether can (there are usually plenty of them lying about the office), and solder to it, near the bottom, a tin tube, about one-quarter of an inch in diameter; then perforate the can through the tube with an old excavator, pointed so as to make a hole about the size of a pin. Fill the tube lightly with absorbent cotton or sponge, allowing it to protrude so as to rub against the stone; then fill the can with water and cork it with a good, soft cork, and it is complete. When it is tightly corked there will be no flow; loosen the cork, and the water will flow, much or little, as you desire. Mine works very nicely, and is always ready for use. Of course, the appliance should have legs to raise it to the proper height.—A. Morsman, in *Cosmos.*

179. **Bowl for Mixing Plaster.**—A smooth glazed bowl is best for mixing plaster. If some of the plaster dries in the bowl, it will come off easily when water is poured in.—ITEMS OF INTEREST.

180. **Lower Gold Plates.**—In making gold plates for the lower jaw where one or more teeth remain, the following plan may not be generally known:

We will suppose the case to be minus the bicuspids and molars, the six front teeth remaining. Instead of cutting a pattern in one piece, let there be two; one to extend on one side around in front to where the first bicuspid would be on the opposite side, and *vice versa* for the other pattern. Use No. 30 plate, and 20-karat gold looks the best, used with the same fineness in solder. This will give a plate that can be easily swaged. Swage separately with each half on a good, sharp zinc die. Select one-half to go next the teeth, and the other to lap over it. Drive the under one sharply around and between the teeth with a softened nail, having its point prepared for the purpose. Anneal and place both on the zinc, and swage again. Now notice how nicely they fit one to the other. Catch them with a bit of solder and swage again. Then apply clean, creamy borax thoroughly between the plates (and perhaps the best way is with a camel's-hair pencil), then put on solder and run them together. This will give a sharp, strong plate, and more strength may be added by placing a gold wire (No. 18) at the lower inner edge. It also relieves the sharpness.

Whether plate or rubber teeth be used, this, if finished handsomely, will give a most desirable plate, providing the minor details have received their due attention.—Theodore Ledyard, in *Archives*.

181. **Stamping Plates by Hydraulic Pressure.**—A description of a case in hand will be the best means of giving my method. In the present instance an impression was taken with Stent's material, and all the rest of the work was done by my friend and assistant, Mr. Fred. Collett. The impression was chilled with cold water, and sculptor's clay was built up around the margins to the height of one-half inch. A paper could have been wrapped around equally well. The impression then was coated with a solution of soap and water. In this impression, thus prepared, Spence

metal,* just before the point of solidification, was poured. This Spence metal was chilled immediately on touching the Stent's composition, so that all contraction took place from the top of the center downward.

The small die thus made was then provided with three legs made of pins heated and pressed in the metal. These pins held it at just the required height, so that the die, being placed in the middle of the iron ring in which the pressure was to be given, stood at the height required for an additional quantity of Spence metal to be poured in the concavity and around this little die up to the required level. This die, being quite cold, is covered with whiting, and a counter-die of Wood's fusible alloy † is poured over it. This fusible alloy melts at a still lower temperature than Spence metal, and it is poured over the male swage by using the heavy iron ring in which the counter-die must remain during the swaging process. This first set of swages being completed, duplicates are made, if required, by taking the impression of the male die and repeating the process of casting the swages as often as may be required.

The Spence metal is exceedingly brittle, so nothing but steady pressure must be permitted. If it should be found necessary to strike blows on the swage, others must be made of some other material. In the present instance a Babbitt's metal swage with a tin counter-die was made on which to break up the plate. The flat plate may be placed between the dies with a bit of glove-kid or rubber-dam between the plate and the counter-die, and the flask containing it placed directly in the press. The screw at the top of the press being turned down to give such pressure as is possible from above, the second screw connected with the plunger at the side is then gradually turned inward by means of the large driving-wheel. The manometer is watched, as indi-

*This substance is sulphur and iron. It melts at about the boiling point of water, and in process of cooling a stage is reached, just before solidification takes place, at which the mass becomes exceedingly fluid. At this stage it can be poured in an impression of plaster, or even Stent's composition.

†Composed of fifteen parts of bismuth, eight of lead, four of tin, and three of cadmium. This forms a silvery-white, granular alloy, which becomes soft at 135° F. = 57° C., and fuses at about 145° F. = 63° C.

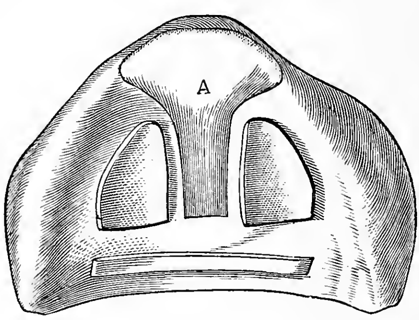
cating the amount of pressure that is being given; four hundred pounds to the square centimetre is generally enough, though I have as an experiment run it up to twelve hundred.

During the swaging process the plate should be frequently annealed. When finally down, close to the duplicate swages, it receives its last trimming, its last annealing, and is then put on the original die that was made directly from the impression. When taken from the press after this final pressure, the fit is more perfect than any struck swages can make it.

For suction plates it is generally necessary to scrape the center of the plaster impression and not to put in an air-chamber, the fit of the hydraulic press plates seeming to be as good as the impressions from which they are made.—Dr. E. A. Bogue, in *International Journal.*

182. **Self-closing Flask Clamps.**—Nearly every office has one or more of these useless appliances standing around, representing from two to five dollars' worth of misplaced confidence. The self-closing flask press, for closing the flask either by steam pressure or by spring pressure, is a failure. The most reliable machine for the purpose is the direct pressure screw clamp, to be used with the flask in a water bath.—Wm. H. Steele.

183. **To Make a Plate Hold.**—The cut will show how I managed a case in a mouth which presented difficulties in the way of holding a plate. The case was that of a patient fifty-five years old, whose teeth had been out for years That part of the mouth shown at A was a perfect callus. Over this part on the cast I laid four sheets of tin, so that



when removed it would prevent a bearing on the callus, with chambers on the sides and back part of the plate, as shown

in cut. I made a failure three times, but finally succeeded in this way in getting a good, snug-holding plate. This was eight years ago.—S. M. Oviatt, D.D.S., in *Cosmos.*

184. **Colored Soap Suds for Impressions.**—Colored soap suds can be easily made by adding a little red analine dye to the water used in making the lather. A very convenient arrangement is to take a beer mug and place a piece of castile soap in it and use an ordinary lather brush; brush the impression with the soap suds, let stand a few minutes, then wash off. This will give a smooth pink surface. Also treat the model with the suds, which will give it a smooth colored exterior.—H.

185. **Investment for Soldering.**—In using sand and plaster to invest soldering cases, I find three of sand and one of plaster does better than if less sand be used; it is not so liable to crack and warp, especially if the plaster be very coarse and the sand sharp. It is only necessary to have sufficient plaster to hold the particles of sand together. More than this is too much and leads to cracking.—Theo. Ledyard.

186. **To Repair Soldering Investment.**—Occasionally, in soldering, a portion of our investment breaks off, exposing a part of a tooth. We can ill afford the time to patch the break and wait for the plaster to harden again. The exposed portion of the porcelain may be perfectly protected by covering it with a thick paste of chalk and water. This mixture may also be used to fasten small pieces of gold to the solder-block while soldering.—B. A. R. Ottolengui, in *International.*

187. **Englarging the Holes in Artificial Teeth.**—I frequently find it convenient to alter the shape of the holes in pivot and porcelain teeth. At first I used a piece of copper

wire with emery-powder, getting the idea from the glass-cutters. Now, however, I find that the time required can be reduced to one-third by using a piece of hardened steel of an oval, square, or half-round shape (see illustration), made to revolve rapidly in the office lathe, and kept covered with coarse corundum moistened with glycerin. To show how rapidly this will cut, it is only necessary to say that a common Bonwill crown can have the hole enlarged enough to admit of two pins as for a bicuspid in ten minutes.—W. H. Rollins, in *Cosmos.*

188. **To Prevent Modeling Compound from Sticking to the Teeth.**—In taking impressions, take a large pellet of cotton, dip it in glycerin and thoroughly oil the teeth; then take impression before the patient closes the mouth.—Abiel Bowen, Medina, N. Y.

189. **To Renew Plaster.**—Don't throw away your old plaster that has become air-slacked and slow setting. Put it in a pan, and put in the oven or over a slow fire, stirring it thoroughly till heated all through; put in a can, cover air-tight. Plaster treated in this way will often be stronger and quicker setting than when first received from the depot.—Wm. H. Steele.

190. **Clean Joints.**—I have seen many inquiries and suggestions in our journals in regard to making sightless joints in putting up sets of section teeth on rubber, or when rubber is used as an attachment, but in all I have never seen any suggestion to the following method, which I have adopted with success, and give for the benefit of the readers of the *Archives:* When the case is flasked and ready for packing, I first cover each joint with a strip of No. 30 gold foil, one-fourth of an inch in width, burnishing it down evenly, and holding it in position with a small piece of pink rubber. I then pack as usual, and find, after vulcanizing, the joints perfectly clean, as no rubber can be forced through the gold strips in them.—Dr. B. Q. Stevens, in *Archives.*

191. **Resetting Pinless Teeth on Gold Plate.**—Occasionally a gold plate is brought to us with a tooth broken off, the pins, of course, remaining in the backing. It may be that a good match cannot be found, or you may be in a hurry, so that you wish the same tooth could be used. Proceed as follows: Boil the tooth in acid, to get the stump of the pins remaining as clean as possible; invest it as for a backing; lay a bit of pure gold over each broken pin, and point a fine flame with the blow-pipe till a tiny gold ball is made on each broken pin. These may be filed up, and will be sufficiently long to allow backing the teeth, using platinum foil and gold of a lower karat.—Dr. B. A. R. Ottolengui, in *International Journal.*

192. **Hint on Sandpapering Plates.**—Cut a piece of felt the size of your paper disks, and use them together to sandpaper a plate. You will be surprised at the result.—H. H. Buck.

193. **Vulcanite and Celluloid Combined.**—When it is desirable to employ plain teeth placed on the natural gum in front partial pieces, and at the same time to take advantage of the clasping qualities of vulcanite, the objection to such a combination which lies in the unnatural appearance of the interdental spaces may be overcome by simply using a little celluloid in these spaces; select some of the right *pinkness;* run wax in the spaces, continuing it in conformity with the natural interdental gum of the adjoining teeth, allowing no wax on the palatal surface of the plate; invest in flask, separate, remove wax, and also cut away the vulcanite from between the teeth, so as to form a "dove-tail" to retain the celluloid; heat, etc., as usual. If it is desired that the celluloid gum sink slightly *in* the natural membrane, this may be best produced by paring the original model so that the wax, rubber, and celluloid will each, in turn, assume the desired shape.—S. J. S., in *Cosmos.*

194. **A Method of Flasking.**—How to flask a full upper and lower set, and two or three partial sets in one flask.

Directions.—After having prepared the upper and lower sets for the flask in the ordinary way, cut the lingual portion of the lower set out somewhat like the letter U, also the palatal portion of the upper set a very little; then place one condyle of the upper set as near as possible in the U-shaped gap of the lower set. Now put them into the flask in this position, so that the centrals of the upper-set point to or near the top corner of the flask, and the centrals of the lower-set point to the right lower corner of the flask; then flask, letting the plaster come up to the wax in the lower part of the flask in the same manner as is usual with an ordinary full set. The rest of the procedure is the same as in any other method.

An upper and lower partial set may be flasked by this method, by allowing the plaster to come over the teeth, and then proceeding as usual.

Slight fractures of partial sets, when the rubber can be packed on with a hot knife, can be placed in the lid of the same flask, while the plaster is soft. In this way four or five cases may be vulcanized in one flask. A little practice is required.—L. Arndt, D.D.S., in *The Dental Practitioner.*

195. **To Mend a Rubber Plate.**—Put a thin film of wax over the broken surface of one piece, hold the parts above the flame of a small spirit lamp, and, when the wax is melted, press the parts together, and cool a moment. This forms a cement that holds the broken plate in perfect position. The lingual surface may be strengthened with melted wax, and a cast obtained in the usual way.—W. L. Reed.

196. **Shellac for Felt Wheels and Cones.**—How many find their felt cones and wheels get out of shape, and wear out and break in a short time? If they are soaked in shellac varnish that is about as thin as water, and then allowed to dry thoroughly before being used, they will keep their shape, and last a long time. This is specially advisable with the cones as they are very apt to break in two before they are worn out. It is not so necessary for wheels. —Dr. J. H. Beebee, in ITEMS.

197. **Adding New Teeth to Old Plates.**—Dry the plate and stick on a piece of soft wax opposite where each tooth is to be added. Replace the plate in the mouth. If the case be one where the teeth to be added are to replace some which have been extracted, press the soft wax up over the gum. This gives you an impression of the part with the plate in place. While the wax is still soft have the patient close the mouth. This gives you an articulation opposite where the teeth are to be added. While the mouth is shut, see that the wax is not forced away from the gum by the occlusion. Then with a pledget of cotton, dipped in cold water, the wax can be hardened in a moment. You may now dismiss the patient. Remove the plate and run cast. As soon as hard, turn over, and run a little plaster in the articulation, letting it extend to a couple of the teeth on the plate. When this is hard, lift off, and remove the wax. The teeth may now be ground and articulated. This method saves much time for patient and operator and ensures accuracy, and may all be done by the laboratory assistant, except the taking of the impression and articulation.—R. E. Sparks, in *Dominion Journal.*

198. **Rubber-dam in Closing Flasks.**—In closing flasks, either by simple pressure or by boiling, use rubber-dam wet with soap water instead of muslin, and you will be delighted with the result.—Geo. M. Merritt, in ITEMS.

199. **Cores for Casting Undercut Models.**—To prepare cores for undercuts of models, when making dies; a good method consists in thoroughly mixing common flour in the proportion of about ten per cent, to ninety per cent of molding sand; or, what is better, marble dust. This is first mixed dry, and then, on being moistened with water somewhat more freely than the sand alone is moistened, placed in the undercuts, and while the model is being prepared the paste has sufficiently hardened to be gently removed and placed in an oven, or otherwise exposed to gentle heat. When these cores are dry they can be safely handled, and on withdrawing

the model they can be readily replaced in their position.—*Dental Review.*

200. **Starting Amalgam in Difficult Cavities.**—Fillings in cavities difficult of access can be nicely started by saturating a pellet of cotton with sandarac varnish and, touching to a piece of amalgam, carry it in the cavity, wipe off the surface with alcohol, condense with pellet of cotton or bibulous paper and continue as desired.—*Off. and Lab.*

201. **What an Impression Should Embrace.**—The necessary condition to be obtained in the adaptation of the denture to the tissues, is to have it embrace the alveolar ridge and extend backward on the palate to an extent that the entire periphery will impinge on and slightly displace lax soft tissue. This can only be definitely accomplished by securing an accurate impression of the surfaces of these lax soft tissues, which calls for an impression of more of the surface of the mouth than it is ordinarily considered necessary to obtain.

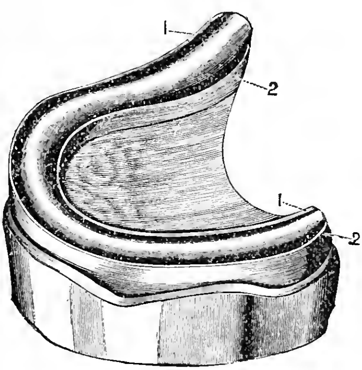
It is important that the impression material should pass upward between the alveolar ridge and the lip and cheeks to the greatest extent possible, without putting the lip and cheeks on more than a slight tension. It must be carried accurately to the extreme height of the space at the outer side of the tuberosity, when such a space exists; and it should extend on the tissue posterior to the tuberosity for a short distance, and on the soft palate for a sufficient distance to allow of locating on the model; the line of attachment of the soft palate to the posterior margin of the hard palate. —W. B. Ames, in *Review.*

202. **Engraving the Ruge.**—The manner of producing the ruge on the surface of an artificial denture is as follows: First take off the wax from the flasked case, then draw lines on the part of the investment which is to be at the lingual aspect of the roof of the mouth when the cover and the receiver of the flask fit together, and engrave the lines with a suitable

knife, then fill in the rubber, and vulcanize. Thus we can get the projections as we desire.—Ichigoro Nakahara (Japan), in *Cosmos.*

203. **Copying Models.**—In copying a model in sand or marble dust, when it is difficult to remove it and leave a perfect impression on account of undercuts, or any other reason, Dr. A. W. Freeman recommends covering the model with heavy tin foil. The model can then readily be withdrawn, leaving the foil in the sand or marble dust, and thus enabling one to secure a good copy.—*The Dental Review.* We have done this long ago, often, and know it to be a good plan.—Ed. in *Office and Laboratory.*

204. **Combination Celluloid Aluminum Plate.**—Take the impression; make the cast and metal die as usual. Make the die and counter in such shape as to leave a depressed margin, with raised rim about one-quarter inch from outside edges of the alveolar ridge of the plate. Now cut the aluminum for plate one-quarter inch larger than the pattern all around, except at the posterior margin. In swaging keep well annealed and gradually turn the gum margin rim as shown in the cut (1 and 1). When the plate is swaged, cut an aluminum collar (2 and 2). Put it on the die and swage so it will fit the plate, and reach close up to the palatine surfaces of the teeth (when mounted); fit to place and solder. Next take the bite, place in articulator and mount the teeth on wax as usual. Invest in a large size celluloid flask; when fully set, open and wash out the wax; take a lower celluloid blank, of as near the size as possible, and trim it with lathe bur till about right to fill the place of the wax gums. Put in place, and care-



fully close in a dry or moist air celluloid machine. When cool, open up and finish as usual. In setting the teeth, if the collar (2 and 2) should interfere, trim away with bur or file to let the teeth go to place. This method gives a beautiful aluminum plate, with just sufficient celluloid for gums and attachments; the rim and collar (1 and 2) firmly holding the celluloid edges to place; when the ridge—that part of the plate between the collar and rim—is properly roughened it is impossible to remove the celluloid or rubber attachments from the metal plate. This plate can be made with vulcanite base and pink rubber gum facings, or the swaged base plate can be made of gold, platinum or silver.—William H. Steele, in *Ohio Dental Journal.*

205. **Sandpapering Plates.**—An excellent device for holding the sandpaper when smoothing off the rubber plate is a piece of rubber-tubing about an inch and a half long and three-eighths of an inch thick, the sandpaper rolled around the tubing. The rubber holds the sandpaper with just sufficient firmness, and allows the paper to fit and accommodate itself to the contour and depressions, or, to use a mining phrase; dips, spurs and angles to a nicety.—L. A. Teague, in *Pacific Coast Dental.*

206. **Second Soldering.**—When it is desired to solder a piece that has been soldered in another place, most gold workers consider it necessary to use a softer solder, which shall flow at a lower temperature than that first used, that the unsoldering of the previous work may be avoided. This is needless, if the solder used in the second case be placed in mercury till the surface is slightly amalgamated. If it be then used it will flow very readily, while the appearance of the finished piece is not injured, as the mercury is sublimated in the heating, leaving the solder as it originally was.—Barrett, in *Office and Laboratory.*

207. **Practical Cheoplastic Plate.**—Proceed as usual with impression; model may be poured of plaster, but plas-

ter with asbestos or whiting is safe. To this fit accurately a piece of piano wire, No. 14 or No. 16, standard gage, along the arch, so as to leave the arch about opposite the first molar; after fitting this wire to the arch, bend each end inward at right angles with the body of the wire; then about one-quarter inch from first bend make a second, by bending wires upward, forming an obtuse angle. This is done so that the wire will be held firmly in the plaster of the upper half of the flask; take a file and make a notch on each side of the wire in the first bend of each end; this is done so that the wire will break in the proper place and easily, when wanted; sandpaper the wire, to remove all dirt from surface, and dip first into muriate of zinc, then into melted tin; this is done so that the metals used for the plate will flow along and become attached to the wire. The wire prepared, cover the model to just the extent that you wish the plate to cover the ridge when done. It is now necessary to decide whether to use a solid plate of metal or a rubber attachment. In nearly all cases, if full lower, and if partials, with much absorption, I use the latter, and have taken such a case for description.

Warm the tinned wire, and press in place; cover the scar with new wax; the case is now ready to flask. For this I find the Watt's flask most convenient. In flasking, care must be used to have sufficient plaster under the ends of the wire to hold them firm, and without breaking, in the upper part of flask. With sharp knife make a groove around the edge of plate in upper part of flask, just where edge of rubber will finish to; this is done so as to furnish a more secure attachment for the rubber, and a larger surface of metal next to the mouth.

For a more secure attachment, especially in full cases, I make several pits, about one-half inch deep in full cases, in upper part of flask, over the ridge; these can be made with an old excavator sharpened like a screw-driver. Now cut a gate from each angle; this I make ample, as it can do no harm, and proves a great convenience.

The two halves of flask are now dried separately in a

temperature that will not calcine the plaster; the oven of an ordinary heating stove is a convenient place. When a mirror held over a warm flask will not gather the slightest moisture, they will do to pour. When dry, the surface of the model should be rubbed with a piece of base plate wax, to smooth the surface and also act as a flux for the metal. The mold should be warm, and the metal but little above melting point when pouring; it should be cooled slowly, to obtain a smooth casting. After separating, the wire should be broken off with the finger. It will break just below the surface, if the notches were made as described. The small hole where wire is broken off is to be filled with same metal as that of which the plate is made, with a soldering copper (not tinned). To do this, moisten the surface of plate about the hole with H C^1, or chlorid of zinc, and place a piece of metal over it and melt in place with warm copper. Now, with a file, smooth off plate in a rough form, and fit to mouth; after fitting, take the antagonism, using plate you have just made as a base plate, then proceed as usual with rubber attachment. Should you wish to make a solid plate after fitting the wire, proceed as usual with cheoplastic plates, excepting that after the case is on the articulator the wire is to be put in place *before* the teeth are ground. Any of the alloys of tin in use may be used for construction of this plate. While I have tried them all, I like fifteen parts silver to eighty-five of tin, though the addition of three per cent of bismuth makes a good plate.—C. W. Staples, D.D.S., in *Ohio Dental Journal.*

208. **Holding a Broken Plate.**—To hold in place the broken pieces of a denture preparatory to mending, fill a lower impression cup with softened modeling compound as to take an impression. Press the teeth of plate in this, and bring the edges of the fracture together accurately. When the compound has become hard, dip the plate in water, and fill as when making a model. As soon as the plaster is hard soften the compound and remove it, and proceed as the case requires.—W. D. Tickner, in ITEMS.

209. **English Pinless Teeth on Rubber.**—Dr. H. C. Boyd uses these teeth with rubber, running gold pins through the holes in the teeth, allowing the ends to project far enough to solder a continuous band to the ends of the pins, investing in plaster and asbestos for soldering. The teeth are then waxed up and the piece invested, well vulcanized as usual, making a strong but not cumbersome piece.—ITEMS OF INTEREST.

210. **For Leaking Vulcanizers.**—To prevent leakage of vulcanizers, take plaster of Paris, mix it thin and run it around the inside of the cover, and while soft screw it to place, letting it stand a short time before putting over the heat.—Dr. E. A. Schillinger, in ITEMS.

211. **Sandpaper Mandrel for Plates.**—Take a quart-taper cork; trim up in cone shape on the lathe; make a slit through apical end of cone, half-way down, with a dental saw; insert in this a piece of sandpaper a little wider than the opening; bend back at one end for retention, and you have a hand sandpaper for use on rubber plates which conforms with the depressions and works admirably.—Dr. Barnes.

212. **Teeth Changing Color in Soldering.**—The changing of color in soldering teeth is due to not knowing how to use the blow-pipe properly. We will find that every man who is not accustomed to the use of the blow-pipe puts on a fine flame blow-pipe, because he is afraid. When you use the blow-pipe for the full force, heat it till it flows of itself, then you need not be afraid of the teeth changing color. The changing of color is because you put too much strain on a certain place.—Dr. Nels Nelson, in *Review*.

213. **Soldering Without Investment.**—I observe in the article by Dr. Essig, in the April number of the *Dental Cosmos*, that he speaks of investing bands for the purpose of soldering thereon hooks and short tubes. With me there is a much easier and simpler plan. I join all bands in the making with high-grade solder—20 or 22k. To attach a hook

or tube to a band, first hold the latter with a pair of moderately thick pliers at the point of union. That this may be kept below melting point and from danger of unjointing, place a little flux and 18k. (or lower) solder on the spot where attachment is to be made, and melt with a fine flame of the blow-pipe. If a bit of tubing is to be placed, take a piece of wire six or eight inches long, or any slender instrument, the point of which will fit within, having this covered with a thin coating of a thin mixture of whiting (or rouge) with water, to prevent a flow of solder inside the tube or possible sticking to the wire or point which we are to use as a holder in making the attachment. Now, with a reasonably steady hand, holding the band as before with pliers, the tube, fluxed on the joint side, may be quickly and accurately fastened to the band over a small gas flame; a piece of wire may be attached in the same manner, leaving it long enough to serve for its own handle, and cutting off to proper length after soldering, or the hook may be held with jewelers' fine pliers.

Another method, and a good one, is to punch a hole in the band just large enough for the close insertion of the end of the wire, which should be fluxed, when it may be securely fastened with a bit of solder. This is an excellent way to attach screws of the "Angle" jackscrew sort.

Speaking of this reminds me that the so-called "pipes" of the "Angle set" are identical with those kept in stock by the wholesale jewelers under the name of "joint wire," in three or more sizes, and sold at about a cent an inch, German silver. The large size is available for jackscrew and traction purposes, with No. 18 gage wire screws; the smaller for use in connection with spring wire for rotating teeth in mal-tort. This "joint wire" is also available for tubular posts in crown-work,—being very strong and made with absolute accuracy. —Garrett Newkirk, in *Cosmos.*

214. **Retaining Lower Plates with Gold Posts.**— Extract the teeth, being very careful not to break the labial or buccal plates of the alveolar process, for if this should

happen you will ultimately have shorter pins than where the process is preserved in its entirety. Next make pivots of gold (pivot wire), a trifle shorter than the roots of the extracted teeth, which have been kept for measurement. The following day take the impression, modeling your case in wax, and see that all is right after the bite has been properly adjusted; then add the two gold pins, one on each side where most suitable, that they may enter, not the center of the sockets (as I said in my first paper), but rather toward the posterior walls of the sockets of two of the extracted teeth—the first bicuspids or canines are the most suitable. The pins should be as long as possible, because if too short they cause irritation, and, consequently, absorption. Having fixed the pins to the wax denture, again try in the mouth, to make sure the pins do not hurt, and that they run parallel to each other; then cut a slit in the model wide enough not to disturb them, fasten them with plaster, and proceed to vulcanize in the ordinary way.

When repairing a denture with pins attached, place a small hickory pin in each of the holes in the jaw. These can easily be removed, either by yourself, when replacing the denture, or by the patient, if it is sent home.

You will notice particularly that absorption does not take place so rapidly when you adopt this method, as it keeps the denture steadily in position; and, as you know, wherever there is friction there is always more absorption.—W. Dall, in *Jour. British Asso.*

215. **To Obtain a Correct Articulation.**—It is not only essential, but absolutely necessary, that we should have a perfectly natural close of the mouth, and a correct articulation, when constructing an artificial denture; otherwise it will be worse than useless to the wearer. It is almost impossible to get a natural close of the mouth if one depends on a first bite (or any number of bites) and wax rims only. I have followed the method given here for ten years without failure. For illustration: We will take a full upper. Get a perfect impression; make a cast and pattern plate, as

usual; try the plate in the mouth, and trim till it fits easily to place; remove and put on it a rim of softened wax; have just sufficient to receive the remaining natural lower teeth. Put the plate and wax in the mouth; have the patient throw back the head, swallow, and close the teeth in the wax; remove the bite, pour the teeth, and mount in an articulator; that will allow of the bite being changed in all directions; when the plaster is set, open up and remove the wax; now mount the six anterior teeth in the correct positions, and try in the mouth; have the patient laugh, talk, and smile, getting the different expressions; if the teeth are not correctly mounted, reset and try till they are right. Now build up with wax on each side where the lower bicuspids will strike, also extending behind the upper cuspids, so the lower cuspids will touch it; build the wax high enough, so the lower bicuspids will bed the cusps in when the mouth is closed; smooth the top, and put in the mouth. After the plate has been in position a few minutes, tell the patient to swallow, at the same time gently close the mouth till the lower ones dent in the wax; remove the plate and put it on the cast. Now close the articulator carefully; if the lower bicuspids and cuspids close exactly in their proper places in the wax there is no need of a change, but if they do not, try the plate in the mouth till *sure* of having corrected the bite; then loosen the set screws of the articulator, adjust the plaster teeth in their proper places in the wax, and tighten the screws.—Wm. H. Steele, in ITEMS.

216. **Clicking of Artificial Teeth.**—Clicking and rattling of full sets of artificial teeth is caused by poor articulation, by ill-fitting plates, and by the teeth being too long. In nearly all full sets, when first tried in mouth, the molars and bicuspids are found to be too long; and to bring the incisors near enough, the cusps are ground, making them flat and smooth, with no indentations, thus allowing them to slide about. To prevent this, preserve the cusps or points unground, thus allowing them to interlock, and, therefore, less liable to "clatter." Another great benefit of this method is,

that uneven surfaces coming together cut or divide food better.—A. A. Hazeltine.

217. **To Prevent Plaster from Adhering to Flask.**—Dr. A. W. Buckland paints the inner surface of flasks for vulcanite work with a solution of whiting, which allows the plaster to be removed easily and protects the flask from corrosion.

218. **Soldering Bands to Plates.**—A great saving of time is effected by using casting sand, as an embedding material, instead of sand and plaster. It is also claimed for this that the relative position of the band to the plate is better maintained. Mix your sand with water to the consistency of cream; place the plate, with band waxed to it, on a pumice or asbestos block; drop the sand around band, and a little to fix plate, much as you would with plaster and sand. The asbestos soaks up the water, so that the sand "sets" almost at once. Now warm up the sand. This is most important. When that is warm, burn the wax off; then borax and solder. —*British Journal Dental Science.*

219. **To Make Strong Partials.**—I have a suggestion to make about partial dentures. It is assumed that anybody can make a rubber plate, and it seems like wasting time to talk very much of what we should do in the manufacture of partial dentures of rubber. I adhere to a few general principles, one of which is, I always use plain teeth, when possible. In partial plates of gold, I have been very much bothered in years past about the teeth breaking off. The correction of that difficulty is an excuse for my talking at this time. I make the teeth, as I would make a dummy in a bridge case. I select porcelain facing the same as I use in bridge-work, then I select an artificial tooth, for making solid gold cusps. You will find the cusps of natural teeth are so pronounced that they are not practical to use; but take an artificial tooth and produce a solid gold cusp, back up your facing, and grind it to place on the model, and then

set it against your gold cusp. Invest it and fill the space behind as you would a dummy, grind again up to your plate and solder; your metal will never break, and it will be a beautiful case. There is no danger of the porcelain breaking off.—Dr. E. J. Perry, in *Review*.

220. **Flask Bolts.**—Do not try to economize by using old worn-out, or gummed-up flask bolts. Many porous plates, faulty articulations, etc., are caused in this way.—Wm. H. Steele.

221. **Flask Heater.**—A good rubber heater is easily constructed by taking a shallow, round tin pan and soldering a cover on it, leaving a water space of less than an inch; through this top make a round hole, to which a short tin tube is soldered for the escape of steam.

It will keep your rubber warm sufficiently for packing in the flask much longer than on a disk of tin, and there is no danger of burning it either.—W. W. Davisson, in ITEMS.

222. **Aluminum Hints.**—I agree with Dr. Haskell, that aluminum is an excellent substitute for rubber; and my experience proves it to be far superior, in every way, for either full or partial dentures.

The aluminum plate used must be *absolutely pure*, and must be worked so as to keep it pure during the entire process.

If the plate contains the slightest traces of iron, or silica, it is unfit for dental purposes. The die should be covered with thin, tough India tissue, during the process of swaging, and a couple of thicknesses folded over the plate, to keep it from coming in contact with the metal of the counter.

Do not use salt, or anything of the kind in the investment; and do not have zinc in the boiler when vulcanizing the rubber attachments.—Wm. H. Steele, in *Ohio Dental Journal*.

223. **Resetting Pins in Artificial Teeth.**—Teeth or blocks that have broken off from plates, and the pins remain in the rubber, can be used again as follows: Remove the old pins from the plate, and if they are perfect use them; if not, select from your stock of old pins the ones needed (save up all old pins for this purpose), without flaws, and with good heads. With a small diamond drill, deepen the holes a trifle, where the old pins broke out. Wax the new ones in position, invest in asbestos cement and plaster, or marble dust and plaster; remove the wax. Select some small pieces of opaque glass as near the tooth shade as possible, and fuse around the pins with blow-pipe.—Wm. H. Steele.

224. **Something New in Rubber Plates.**—One of the features introduced as a novelty, at the late meeting of the Mad River Valley Dental Society, was a method of making vulcanite plates without the teeth attached; in other words, vulcanizing the rubber on the plaster model, using the plate or plates thus obtained instead of a wax base-plate for securing a bite, and finally attaching the teeth by a second process of vulcanizing. The idea is original, we believe, with Dr. Bradley, of Dayton, Ohio. The advantages claimed for the method are such as apply to swaged metallic plates, *viz.*: Greater accuracy in securing a "bite" in difficult cases; the opportunity of determining at an early stage of the operation whether a good fit has been secured; also the advantage of allowing the patient to wear and accustom himself to the plate before the teeth are attached. Dr. Bradley thinks the method of special advantage in all partial lower cases. The narrow rubber band at the lingual base of lower anterior teeth may be strengthened by cutting a groove with a fissure or wheel-bur, fitting in this a *brass* wire, and vulcanizing rubber over it. For attaching the teeth, the surface of the plate is treated with a solution of persulfid of carbon, after which, the teeth being in position, more rubber is applied, and the piece again vulcanized.

Dr. Adams, of Dayton, stated to the Society that the packing of the rubber, when the plate is first made, may be

done as ordinarily, with the fingers and a blunt burnisher, after which the surface is covered with tin foil, the case invested and vulcanized. He dispenses with the wax base-plate, and consequently with the various steps of varnishing and oiling, and a second pouring of plaster in the flask. To be more explicit, the rubber strips are packed on the face of the model *before* flasking at all, and then the model is invested at one operation and immediately vulcanized. It will be seen from this, that no pressure is brought to bear on the rubber in closing the flask.—*Medical and Dental Journal.*

225. **To Gild Artificial Teeth.**—Any dentist can stain and gild artificial teeth by using the proper tube colors, such as are used by china decorators. A small furnace or even a good blow-pipe may be used.—D. V. Beacock, in *Ohio Dental Journal.*

226. **To Improve Shaw Engines.**—Cut off enough from the tube of your Shaw engine (if you use one) to allow the shaft to run, say three-quarters of an inch further through, this will enable you to put on a small wire brush to clean burs.—D. V. Beacock, in *Ohio Dental Journal.*

227. **Use of Cores in Casting Dies.**—The making of metal lowers where the incisors and canines are standing is one of the most difficult things for a mechanic to do. There is nearly always a great ridge standing out at the internal alveolar edge which renders the casting of the model a very difficult, in fact almost an impossible task. I for my part always cast first what is called a core. Make the model as smooth as possible, then take some thin tin foil and cover the inside of the model, pressing the tin very closely to the plaster; then take flour and casting sand in the proportion of 20 of flour to 100 of sand, mix these well together first day; then moisten the mixture slightly to about the same extent one would ordinary casting sand, and press it well on to the model with the fingers; bury a piece of strong wire in it, leaving a piece standing out at the back as a handle, if you

like, then fill up to the top of the undercut only; then, when this is firmly pressed together (leaving no bits overhanging), draw it out in the antero-posterior direction of the mouth; or, in other words, draw it out at the back, and then place the core in the oven till it is baked perfectly hard and dry. (Two or three should be made, in fact a fresh core should be used for every zinc casting.) When dry, place the core (having cut off the handle at the back perfectly level with the sand) in the model, and then cast in the ordinary manner; the undercut will lift out the core when the model is taken from the sand; it can then be removed from the plaster from behind and placed back in the sand, and then the zinc poured in. The casting when cool will require very little trimming, and the undercut will be found almost perfect. This only requires a little practice to produce an excellent model.—Dr. D. W. Parsons, in *Ohio Dental Journal.*

228. **Jumping Solder.**—In placing foil scraps in a crack where you wish to span solder, use scrap mat gold, it will stay where put and not ball but make a satisfactory joint.—Dr. H. Prescott Wilcox.

229. **New Method of Working Continuous Gum.**—After glancing at the older methods of supplying the deficiencies of teeth, Mr. Hooten said he had been engaged for years at great personal labor in elaborating a system to make porcelain teeth on gum substance which would neither shrink nor crack in burning. His labors had resulted in the finding of such a "body" which fulfilled these requirements. The appliance which he had to describe was designed with the object of molding the teeth and gum substance in a manner which would be universally applicable to any form of teeth or gum, and with a series of matrices of different types of teeth it was possible to adapt the one to the other by one process. The process was applicable alike to gold plates and to vulcanite, without need of platinum; thus partial or complete sets could be molded as easily as vulcanite.

(1) The molds or matrices are made by mounting sets of teeth of various types and sizes in wax; seven or eight types being sufficient for ordinary work. These wax patterns are not fitted to any gum outline, but are contoured to the form of an upper or lower maxilla, and are made flat on what would be the gum surface; in other respects they are exactly what a set of artificial teeth would be. These form the "male" part of the mold, which is cast in plaster of Paris in two parts. These are trimmed in shape so as to be reproduced in brass or gun metal, so as to be clamped together by pins, and on the upper surface a metal plate is cast like the lid of a vulcanizing flask, except that it has three countersunk holes and a central hole through which a screw passes, and on this a winged nut works which clamps the whole. This apparatus is thus worked: A universal articulator is prepared, and in it is fixed a zinc model of the case to be treated; on this is placed a wax bite of the dimensions of the required plate. A soft brass plate is adapted around outside of this, being molded to take the external outline. The wax bite is removed and a wax counterpart of the inside of the brass mold made. This is adapted to the zinc model by heating. Before the zinc is heated the articulator is removed, but it has to be replaced before the wax counterpart is run down. The wax bite is thus outlined with teeth and gums, but with its gum surface the counterpart of the zinc model, and it is then returned to the brass mold and fusible metal melted and poured in through one of the three holes in the lid, which are countersunk. The matrix is quickly opened by withdrawing the pin, and the wax removed. It is necessary that parallel holes be drilled in the lower part of the matrix for the pins. Slits are also sawed in the mold behind the canines on each side, so that strips of thin brass can be slipped in to divide the mold in three parts. In the pin holes are inserted pieces of steel knitting pins of pivot wire gage, and on them are fitted platinum tubes wherewith to line the pin holes in the gum blocks. A plate of copper is put under the matrix to prevent dropping out of the pins. The mold is now clamped, with the exception of

the lid, the "body" being packed in moist; then the lid is added and hammered down and screwed home. The mold is heated over gas till the fusible metal runs out; next, the outer part of the mold and the lid are removed, and the blocks trimmed and removed; the gum surface is then painted and the teeth tinted. The blocks having been dried for half an hour, are then placed in the muffle, which should not be closed till the oil and starch are driven off. In abstract it is not possible to give more than an outline of Mr. Hooten's interesting communication, which should be read in *extenso* in order to do it full justice.—*Ex. Jour. Brit. Asso.*

230. **Flasking Pink Rubber.**—When investing a case where pink rubber is to be used for the gums, be careful and not imbed the wax gum rim in the plaster below its upper edge; for if the parting point between the upper and lower half of the flask should be anywhere on the gum, the surplus rubber of the body of the plate will be forced through the pink, and cause an unsightly spot.—Wm. H. Steele.

231. **Impressions of Soft Pendulous Gums.**—I have seen many ingenious methods of taking impressions of the mouth where the gums were soft and pendulous, but have treated a number of bad cases as follows: Take impression as usual, with plaster a little thick. Press up hard and in such manner as to force loose gum outward as much as possible. Make model, and you will find the soft gum has made a ridge on the model, projecting outward. Trim this off boldly till your model has the shape it would have if the loose gum were dissected away. The amount that can be trimmed off without harm is surprising; and we have never failed of a fit by treating as above.—Dr. H. R. Neeper, in *Archives.*

232. **Treatment of Broken Impressions.**—That portion of the impression coming away with the tray is placed on a blotting pad, and the pieces as they are removed are placed by the side of the tray; those belonging to the right side of the mouth at the right of the tray, and those of the left to

the left. This blotting pad, you will see, answers a three-fold purpose: of a nice clean piece of paper on which to lay the impressions, to keep the instrument bracket clean, and something on which to carry the impression to the laboratory; and it also assists in the hardening of the plaster by absorbing the moisture, so that in a few minutes it may be handled without fear of breaking in the process of putting together.—E. C. Moore, in *Dental Journal.*

233. **Soldering Bands, Clasps, etc.**—Split an Irish potato, imbed the porcelain, leaving the parts to be soldered just above the surface of the potato, close up the split in the potato, holding it together with binding wire, proceed to solder, no danger of cracking the teeth. The mountings of the finest stones can be mended in the same way without injury to the stone.—James T. Melton, in ITEMS.

234. **Reswaging a Metal Plate.**—The adage, "Necessity is the mother of invention," proved itself true in my practice recently.

I made a gold plate for a patient. It carried one central incisor and the bicuspids and molars. It seemed to come out of the investment beautifully, but when I went to fit it in, I found it raised up from the palate badly. I determined to try an experiment. I placed the plate on the die, removed it and marked the die around, about where the palatal side of the artificial teeth would stand. I then cut away the metal where any of the teeth would be likely to touch the die. I then built up a ring of putty outside of where I had marked the die. I ran a lead counter in my putty ring. I replaced the plate on the die and formed the counter to fit the palate without touching the teeth. A few blows with a hammer on the lead, while an assistant held the plate firmly on the die, brought it in very good shape.—R. E. Sparks, in *Ohio Dental Journal.*

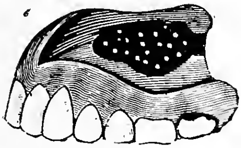
235. **To Replace Broken Block on Rubber Plate.**—Where a broken block is to be replaced by a new one, cut out as much rubber as possible without cutting through,

make proper undercuts, etc., then fit your block between the others, and cement in position with oxyphosphate mixed thin. It is not necessary to have a perfect fit above gum. Cut a piece of heavy tin foil large enough to cover upper half of block and rubber rim; place this in position and cover with cement; mix enough cement to cover whole front of block and part of adjoining two, and hold in position till it has set. This will support the block while under pressure. You can now invest, and use plenty of rubber to force it in all interstices. After vulcanizing, you will find a nicely polished front. Instead of using wax to fill up my undercuts, I fill with tissue paper moistened. This can be taken out easily after flasking.—J. E. Ward, in ITEMS.

236. **Swaging Plates for High Arches.**—In the Alabama Dental Society, Dr. Rosser, spoke of the difficulty of swaging an upper plate when the arch is very high. He advised swaging it in two parts, the roof of the mouth and the alveolar ridge, and soldering them together afterward.—ITEMS OF INTEREST.

237. **To Prevent Teeth From Cutting In Upper Plate.**—A patient wearing an upper plate has the anterior lower teeth in place, but will not wear a lower plate, the lower teeth often cut out the rubber, exposing the pins of the upper teeth. To prevent this, fit small triangular pieces of gold or aluminum against the lingual surfaces of the upper front teeth. The lower teeth striking against the metal prevents exposure of the pins.—Dr. C. L. Boyd, in ITEMS.

238. **A Plate Retainer.**—The following plan has been in use in my practice for several years, and has proved a perfect success in overcoming those difficult cases where we have a *soft alveolar ridge* in connection with a very firm, hard palate: Take the impression with Teague's compound, and make cast as usual; after the cast is hard enough for the base plate, examine the mouth carefully and locate the margins



of the hard palate; cut a pattern from heavy paper, the proper size and shape to cover this part of the mouth; now place this pattern on a piece of tin of the proper thickness, and cut out a *fac-simile* of the paper; fit this on the plaster cast *exactly* in the same position that the pattern was fitted to in the mouth; press it firmly to place, and fasten with cement, or a couple of pins. Now make the base plate, and mount in the articulator as usual; in grinding up be careful to get a *perfect* articulation; invest as usual, remove the wax and pack with best maroon or black rubber till there is just enough for the plate. Then cut a piece of the cloth which comes with the rubber large enough to fully cover the cast, and lay over it in order that the flask may be easily opened; bring the flask *entirely* together. Open, remove the cloth and the tin pattern from the cast. Fold sheets of black soft *palate* rubber, till it is one-half thicker than the tin; lay the pattern on this and cut the rubber same shape and size. Place this piece of rubber in the depression made in the rubber by the tin pattern. Close and vulcanize as usual. When the plate is all finished, pit the surface all over as shown in the cut, with a No. 7 round bur, while doing this, the rubber and bur must be kept wet. The soft rubber should follow the hard ridge entirely back to the heel of plate, as shown in cut. The thickness of the soft rubber should be governed by the variation in difference between the hard and soft tissues, and often the tin pattern should be thinned with a file in some parts before fastening to cast, in order to make the soft rubber thickest in the hardest part of the arch. See cut. —Wm. H. Steele.

239. **Spoon for Mixing Plaster.**—If you use a spoon to mix plaster, see how much more useful it will be if you place the bowl of the spoon on the anvil and flatten it out. It will take up dry plaster just as well, and will prove a very good spatula.—Dr. W. S. Elliott, in ITEMS.

240. **Burnishing in Amalgam.**—We all believe amalgam should be burnished in the cavity for which it is

intended; an absolutely sure way to accomplish this is by use of ball burnishers in the engine, the amalgam can thus be forced in the *tooth structure*, rendering the filling very perfect.—H. Prescott Wilcox, D.D.S.

241. **To Replace Tooth in Gum Block.**—To repair a broken gum-block, grind out the broken part and fit a plain tooth neatly.—D. V. Beacock, *Ohio Journal.*

242. **Removing Impressions.**—Referring generally to all kinds of impressions, a difficulty is sometimes experienced in removing them from the mouth owing to suction. In this case, request the patient to cough slightly. The effort will elevate the soft palate letting the air between, rendering the removal no longer difficult.—F. Molloy, in *Ohio Dental Journal.*

243. **For Wetting Corundum Wheels.**—Keep your corundum wheels wet with water containing a few drops of alcohol. If they have become gummed, soak in a solution of caustic potash, afterward washing in weak alcohol. The treatment is old, but none the worse on that account.—*Odontological Journal.*

244. **Lining Rubber Plates with Metal.**—When you have the case in the flask clean and ready to pack, cover the male flask with liquid silex to make it smooth, then lay over the center of the cast No. 40 tin foil about one-quarter of an inch larger than the "central cavity." And put no other central cavity. Now cover the entire male cast with No. 4 chemically pure tin foil, and rub it down smooth with a piece of cotton batting. Now fill the other part of the flask with rubber and fill it full.

Take the piece of cloth that comes between the sheets of rubber and wash out the starch, and lay it over the rubber and press the two parts together to within one-eighth of an inch. Now take the flask apart and wet the cloth and take it off. The cloth being woven open, will leave little

elevations on the rubber to hold the fibrous material. Trim off the surplus rubber nearly to the edge of the plate, then lay Robinson's Fibrous Material on the rubber bed, lapping the edges and it will not move. Now press the flask together with dry heat till it is tight enough to keep out the water, make the flask sissing hot. Then boil it tight together and vulcanize 320—forty-five minutes, then run the thermometer to 340 and shut it off. When vulcanized, wash the plate in bicarbonate of soda till it is bright, and burnish with a soft steel burnisher; now finish up the rubber part of your plate, and then finish the lining with a soft wheel-brush in a lathe with whiting.

We have seen several cases pronounced by good dentists as unable to wear rubber, who now rejoice in a healthy mouth, caused by using a rubber plate lined with Robinson's Fibrous Material.—Ed. in *Dental Review.*

245. **To Prevent Weighted Rubber Irritating.**—To prevent the metal in weighted rubber from irritating the gums, I use *non*-weighted rubber for the last layer when packing my flasks. Thus I get a smooth gum-surface with the desired weight.—John K. Morse, D. D. S.

246. **To Prevent Flasks Staining Hands.**—To prevent iron flasks from smutting the hands, put a piece of unslacked lime, the size of a peanut, in the boiler while vulcanizing; the smut will be there just the same but has undergone a chemical change, which keeps it from sticking to the hands and washes off very easily.—D. W. Barker, M.D.S.

247. **When Pouring Impressions.**—When filling impressions and articulating models use a sheet of glass for base as the plaster does not stick to it; makes a smooth surface and it may be handled and turned around without disturbing the plaster.—D. W. Barker, M.D.S.

248. **To Make Rubber Plates Smooth.**—Give the cast a heavy coat of liquid silex (if the cast is very dry dip in

water first), then place immediately in the warming oven; then after a few minutes—depending on the temperature—cover the cast with a piece of rubber and watch closely. Just as soon as the surface of the cast becomes hard, remove from the oven and pack. Herein lies the secret, for if the silex becomes too dry it will rough up and become worse than useless, the rubber, however, prevents too rapid evaporation and avoids this mishap.—J. M. Overshire, D.D.S.

249. **Lower Partials.**—I have prepared these cases, using gold for partial lower dentures where the incisors are in position, and sometimes the first bicuspid, the object being to prevent the plate from pressing to the back part of the mouth. They are used when there is no molar to prevent the plate being driven posteriorly. The plate is swedged in the usual way, the band extending around the ridge just below the incisor tooth, and the whole put in the mouth and filed nicely to fit. An impression is then taken, and the whole invested and soldered in that way. The purpose is to get a band of gold broad enough to prevent cutting in the ridge running around the front of the tooth, or the ridge just below the teeth. One of the advantages is to prevent the necessity of using clasps. It is rarely that a bicuspid can be clasped with satisfaction, as it is not adapted for it, and I think this method secures better results than clasping. It avoids the band that Dr. Genese speaks of, and makes a very firm and substantial plate.—Dr. Nichol, in *Odont. So. International.*

250. **Vulcanizer Wrench.**—If, instead of the old methods in which perhaps we have jammed our hands, and have felt like breaking a commandment, we have a long-handled malleable iron wrench, which a village blacksmith can make, for the top of the boiler, and place this in position and lay the vulcanizer on its side on the bench, and hit the long handle of the wrench a smart blow or two with a hammer, the work is done without friction to hands or feeling.—W. H. Wright, D.D.S., in *Ohio Dental Journal.*

251. **Fusion of Gum Sections.**—The teeth are ground up and articulated the same as any other case, with this provision, that they must have wide V-shaped joints to allow for the rapid flowing of the flux or enamel. Then after the teeth are arranged in position and articulated properly, there is an investment with half plaster, and platinum wire is laid across the platinum pins, and that is fused with the blow pipe, which gives it an added strength. Then take that and the skeleton and invest the joints with this enamel material, putting it in the oven, or rather on the slide. There are three different movements in the gradation of the heat, as it gradually comes to the fusing point. In three minutes it is raised one-third more of the distance, and at the end of three more close it. When you get it in the oven allow it to remain there fifty-five seconds. This same operation with gas will take about five minutes, so you can see there is quite an item in the amount of time saved. This operation gives quite a respectable appearance to a set of teeth on rubber. It gives the plebian base quite a patrician appearance, and it has almost the appearance of continuous gum. —Dr. Brimmer, *Extract Review.*

252. **Hint on Articulating.**—It is often difficult to make a full upper denture work satisfactory when the patient has only the four or six lower anterior teeth. I always try to impress on the patient the value of a partial lower plate to be used in connection with the upper. But if only the upper one is to be made, in adapting the teeth to conform to the circle of the lower teeth, leave plenty of room for the lower teeth to pass inside of them without touching, thus preventing tipping at the back. Have the lower teeth bite on a floor or shoulder of rubber built on the upper plate from the pins of the teeth back about one-eighth of an inch or thereabouts. Also regulate the length of the bite with this shoulder, building it down toward the points of the teeth, as the case admits.—W. E. Dadmum, in *Minn. So., Review.*

253. **Uselessness of Air Chambers.**—Air chambers cause unnatural formations in the roof of the mouth, in pro-

portion to the size and depth of the chamber used on the plate; and the thickness to which a plate must be made to permit such a depth of the suction, often impedes rather than facilitates the enunciation, to say nothing of the unpleasant sensation of constant drawing or sucking, till the membrane, drawn in the chamber, becomes callous and lifeless. How much better, for humanity sake, it would be for all dentists to make their plates the shape of the mouth and abandon the useless air chamber.

I wish to say here how every dentist can satisfy himself in five minutes of the inutility of the air chamber.

When you have fitted the teeth to the mouth you say to yourself, "What a good suction the air makes to this plate," but remove the plate from the mouth and fill the air chamber with soft beeswax and have it so it will not bear on the roof of the mouth, and you will find, perhaps to your satisfaction, the same suction that there was before. My method is to make three or four ridges across the back part of the roof of the mouth on the plate by scratching gullies in the model. If the gum is soft I make these from one side to the other, across the entire model, but if it is hard (as the model shows) then I do not make them entirely across, but only on each side of the median line.—Lee Stephen, in *Ohio Dental Journal.*

254. **New Lining for Vulcanite Plates.**—Rubber-dam as a lining for vulcanite plates cannot be surpassed. You proceed as usual with your case and when ready for packing, first pack round the pins and flange; then cut a piece of red rubber the shape and size of your cast, large enough to come up as high as you will require your case when finished. Then lay a new, clean, thin piece of rubber-dam over this and cut out a piece to fit; remove and paint your red plate all over with good red or black rubber solder or cement on one side, being careful that it is all covered well with the cement. Now take the piece of dam and place it smoothly on the painted side of your plate; press well down; make it quite smooth, being sure that there are no air bubbles. If your

dam has stretched, which it will, trim the edges to the red plate. Place your plate in the flask so that your dam will come next your cast. When you close your flask, be sure and see that the plate comes well up around the flange so as to hug close to the model and not allow any red rubber to be forced inside. Close your case by dry heat. Use paper vacuums and not tin, as the dam will not harden over tin.

Rubber-dam is better than gold for a lining, as it is a non-conductor, prevents sore mouths and makes a very tough plate almost impossible to break; so you can make a thin, light piece of work.—L. Crouther, in *American Journal.*

255. **To Prevent Polishing Wheels Splitting.**—Brush wheels, etc., with wood center should not be left in water longer than necessary, nor should they be left on the mandrel. Being put on dry, then soaked, the wood swells and something must split or warp out of shape. Many a wheel is condemned when it is not the fault of the make-up but of its user and abuser.—A. Secor.

256. **Refitting Rubber Plates.**—In rubber plates, where absorption has taken place after the plate has been worn, and the articulation is still perfect refit them as follows:

Take a new impression, and make the model as usual; heat the model in hot water, place soft wax around on the ridge, and press the plate firmly down over this. Now invest the case as usual, separate, pack, and vulcanize and your plate will come out a perfect fit with but little work. This method can also be used where teeth do not articulate correctly; by just cutting them out of the rubber, place in their proper position in the wax, and proceed as above.—C. L. Smith, D.D.S.

257. **Strong, Thin Celluloid Plates.**—In making celluloid plates by the Seabury method, dry out the case in the press for two hours, then mold at 300° F., cool the press down with a sponge and cold water till the thermometer indicates 240°; then close the door of the press and let alone

till cold. A thin plate made in this manner on a metal cast will outlast a rubber one of twice its thickness.—Dr. W. F. Johnson.

258. **Partial Plate With Bands.**—There is one other little point I should like just to mention, it is in connection with those very awkward cases in the upper jaw where the six front teeth alone remain standing all close together. Suction is generally difficult to obtain, so it becomes necessary to make a gold plate with bands round the front of the canines. The patient very naturally complains of their showing. A good way to get over the difficulty is to cover the band, if broad, with white rubber; or if narrow and near the gum, with pink. The band should be nicked with a very fine saw along both borders, the cuts being made close together and not more than one-thirty-second of an inch deep. The rest of the surface being barbed with a sharp pointed graver, in alternate directions, paint over the band with chloro-rubber and press a fragment of warmed rubber well down over this, flask and vulcanize.

Should it be afterward necessary to tighten the band, gently warm it before doing so.—N. Reeve, *Extract British Journal.*

259. **To Remove Teeth From Rubber Plates.**—When it is necessary to remove teeth from an old rubber plate, place the case in a small dish; cover with glycerin and place over your burner till quite hot. The glycerin will soon soften the rubber, so the teeth can be easily removed with but little force and without endangering the pins or teeth; wash the teeth in water, which will remove all traces of the glycerin. Should there be stains on the teeth after removal, or small pieces of rubber between the pins, immerse them in nitric acid for a short time, which will remove all stains and rubber.—C. W. Sylvester, D.D.S.

260. **To Get Cast of Broken Lower Plate.**—Hold the pieces together so the inside or the outside edges of the

plate at the break fit closely together; then drop melted tough wax over break and let cool. Bring the other edges together and treat the same. Take a stiff bar of cold wax just long enough to reach across the plate, from second molar to second molar, fasten the bar to plate with melted wax. When cold the cast can be poured without danger of displacing.—A. Secor.

261. **To Strengthen Poor Plaster.**—If so unfortunate as to have a batch of plaster that will not set *hard*, a little fine ground common stucco mixed with it will make it good at a cost of a few cents. Better to mix them as needed, as too much stucco will make a cast rough, while more can be added for flasking.—A. Secor.

DEPARTMENT C.

DEPARTMENT C.

262. **Articulation of Gold Crowns.**—For the making and articulation of gold crowns I find no plan more simple, or more perfect, than one I have been making for the past two years. After having made the band and contoured it with pliers, or otherwise; select from a collection of molar dies the die nearest the size of the band, and swage the grinding surface of 22-k. gold very thin—34, 35, or 36 gage on a block of lead or soft wood. Now stick this to the band with the smallest particle of solder. Trim the cap, particularly proximal sides, so that it will pass readily between the teeth. The band is now placed in position. If force, sufficient to bend the grinding surface, is required to get the band in position, place under the cap an ordinary foot plugger, and push the band in its place. The patient is directed to close the jaws, and owing to the thinness of the gold grinding suface the impression of the opposing tooth is easily made, thereby securing the correct bite. The crown is now removed. The cap and band are held together by the ordinary soldering pliers, and the cusps are filled with 20 or 18-k. solder, which, of course, unites the band and cap. The crown is now finished in the ordinary way. This is as good a crown as can be made, and recommends itself because it is so quickly made.—Gordon White, in ITEMS.

263. **Quick Method Making Counter-Die for Gold Crowns.**—Make of sheet brass, using hard solder, a cup three-fourths of an inch in diameter and half an inch deep, having a spur on one side by means of which it can be held in a pair of pliers; fill it with Melotte's fusible metal. Select a natural or an artificial tooth for a model; fill the soft rubber ring that comes with Melotte's Moldine with plaster, and invest the tooth so that the cusps project out of

the plaster as far as it is desired to copy them; when dry remove the rubber ring. Melt the metal in the cup, and just before it hardens in cooling press the cusps of the tooth in it. The surplus metal will run over the sides of the cup, and a sharp and perfect counter-model will be secured, in which the gold plate can be swaged after the method of the die-plate, using the lead hubs or bullets. I also use for the purpose sheet lead one-sixteenth of an inch thick, cut in strips two and one-half inches long and one-quarter to one-half an inch wide, one end of which is folded on itself two or three times letter S fashion, the other end being long enough to hold it by. As it becomes flattened in swaging, it can be folded back and forth over the gold plate.

By having one or more of these cups and a sufficient selection of teeth already invested in plaster, it is but a moment's work to select the size desired, and make the counter-die. Should it lose its finer lines in swaging, it can be remelted and an exact duplicate obtained in less than a minute.—Dr. C. H. Robinson, in *Dental Review.*

264. **A Gold Bicuspid Crown.**—Remove all foreign substance, treat antiseptically, and fill pulp canal. Grind away all bulging portions of crown, shaping it so that a band can be perfectly fitted to the gum margin. Use fine gold, gage 26. Cut a strip a third wider than the finished crown will be. Make a simple band, secure the joint with 20-k. solder. Now build up the root or remnant of crown with wax or modeling compound to the required shape, except that the proportions must be thinner and shorter than a proper occlusion calls for. Return the band to the root, supposing it to have been previously fitted, and be careful not to disturb the wax. Now mix a little plaster to suitable consistency and fill the projecting end of the band, pressing the plaster against and around the wax. When set, remove the band from the root. If the wax comes with it, melt it out with hot water. We have now an impression of the ideal tooth surrounded by the band. Allow the plaster to dry by holding it over an alcohol flame.

Have at hand an iron ring about one inch in diameter and an inch or more deep. Fill this with prepared molding sand; take the band and bury it in the sand—open end upward—all but about a thirty-second of an inch of the free edge. Mix some whiting with alcohol to a thick creamy consistency, and with a camel's-hair brush paint the inside of the band and the outside of the exposed edge. Allow to dry. Over the iron ring stretch a two-inch section of heavy rubber tubing. (These appliances are known as Melotte's and are sold at the depots.) We have now a completed matrix in which we will cast fusible metal. When cold, lift from the ring, and wash away all sand and plaster. It will be seen, now, that we have a metallic tooth surrounded by the band, the cervical end of which is clamped by the metal, so that no change can result through subsequent manipulation. The cusps are formed by slitting the free end of the band in three or four places, and with a suitable mallet folding the sections inward on each other; at the same time the band is contained on the metal die. At this juncture the crown can be easily removed from the die and carried again to the mouth for trial. Before completion, however, a few pieces of 18-k. solder with flux should be melted inside of the crown to bind all the folds together. Then the inequalities of the cusps can be finished with file or corundum disks, and the occlusion perfectly adjusted. A little practice will show the simplicity of the manipulation. —W. S. Elliott, D.D.S., in ITEMS.

265. **Contouring Bicuspid and Molar Gold Crowns.**—Select (for instance) a bicuspid natural tooth, perfect in form, from your collection, fasten its root firmly in a vice—saw the crown from the root at the neck. Invest the cusp surface of this crown in a batch of plaster of Paris, allowing all of the crown to project from the plaster except the cusps or that part that would correspond to a swaged or molded cap (see Fig. 1).

From this make, with the aid of molding sand, a zinc die. A variety of these dies, consisting of upper and lower

molars and bicuspids should be had. These are to be used for contouring in the following manner:

Prepare stump of tooth in the mouth according to your accustomed plan; take measurement of same with binding

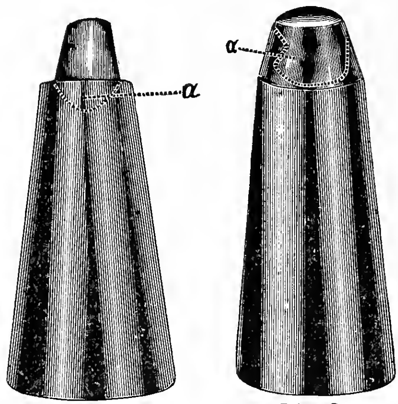


FIG. 1. FIG. 2.

wire or otherwise; from this measurement make a cylindrical gold band; then select one of the zinc dies whose circumference at the neck of tooth is equal to or a little less than measurement of root in mouth, then force the band slowly over that part of the die, representing tooth, tapping and adjusting as it is driven down. The band will take the exact form of the cast of the natural tooth. It is now ready to adjust on the root or stump in the mouth and articulate in the usual way.

You will find this a convenient and effective method of making a gold crown. Anatomical in form, such a result can not be brought about with contouring forceps.

Another method that I have found to be of almost equal value is the following:

Place on a semi-conical piece of wood (or other material) two inches long and five-eighths of an inch at base, a natural tooth crown by means of hard wax, as seen in Fig. 2, buccal surface of tooth upward. The fine lines in Fig. 1 marked *a*, represent the part of tooth imbedded in plaster,

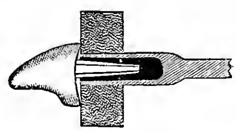
and *a* in No. 2 the part of tooth imbedded in hard wax. With zinc cast of No. 2, stamp the band before it is bent in a circle and soldered.

The buccal surface is thus contoured as nature would have it, and the remaining portion of band can be formed with pliers and fitted, articulated and finished in the usual way.—H. S. Lowry, *Ohio Dental Journal.*

266. **Enameling Gold Crowns.**—After the gold crown is made and fitted to the tooth in the mouth, the sides properly stiffened, the cusps or incisive edge strengthened, it is boiled in acid and then adjusted in the mouth, and the portion of the labial section which is exposed is outlined on the surface of the gold. The crown is then removed, the marked area ground quite thin, and then perforated with a spear-pointed drill. The crown is again adjusted in the mouth, and the thin labial section depressed to make all the room required for the inlay. The crown is then removed, and glass filling material of the proper shade is mixed with water to the consistency of paste, a small portion of which is spread over the depressed surface of gold. The surplus moisture is then extracted with a napkin, and any dry particles of the material which may have fallen on the gold remove with a camel's-hair brush. The crown is then placed with the enamel upward in a small platinum muffle having a depression in its base to hold the crown steadily. The inside of the muffle is coated with whiting. The muffle is then placed on a charcoal soldering-block, and gradually heated up with a gas blow-pipe, blowing the flame against the closed end. A light red heat will fuse the enamel. The crown is then removed, sufficient enamel added to give proper form to the part, and the fusing repeated. The surface of the enamel is then ground level and smooth, the edges finished and the dust removed, after which any pits or inequalities are filled in, the surface being coated by means of a brush with enamel material mixed quite thin, and the fusing again repeated, the heat being carried to a higher point than at the previous fusings. The

result is a dense, smooth inlay of enamel. The enamel is applied in successive layers, and the color is very well controlled, though not perfectly; but the result is not so objectionable in the mouth as a gold crown or a discolored tooth. The melting of the crown is avoided by turning the open end to the operator, and directing the heat at the back of the crown. You will probably melt a crown or two at first in finding out just how to manipulate it, but a little practice makes perfect. The alloy used is three or four per cent of platinum to gold of .997 to .099.—Dr. George Evans, *American Society.*

267. **Crown Grinder.**—Some one during the meeting of the Southern Dental Association at Old Point Comfort, Va., in August, 1888, presumably Dr. G. S. Staples, of Sherman, Texas, described his method of grinding Logan tooth crowns substantially as follows: Take a hollow mandrel like No. 305, and while in the hand-piece heat the end and mount on it a corundum wheel such as No. 00, being careful to make its outer face run true. The neck of a Logan crown can then be ground without any risk of grinding the post, which enters and is protected by the smooth socket of the mandrel.—W. S. H., in *Cosmos.*



268. **Crown Dies of Watt's Metal.**—Watt's metal makes an excellent die for striking up gold crowns by Dr. Melotte's method, using the Melotte metal for the counter. —*Exchange.*

269. **Double Backing for Richmond Crowns.**—Use pure gold about No. 38 to 40, standard gage. After grinding the tooth to fit the ferrule cut out of a piece of gold, leaving it long enough to cover the tip of the tooth at an angle of 45 degrees; cut the second piece a little longer, so the solder will not join the two; do not rivet the pins, but

use sticky wax to hold the backings in place till the crown is in the investment, and then solder in the usual way. This rule is found, when followed out, to give good satisfaction after using it over a year, having had no trouble with checked teeth.—ITEMS.

270. **To Prevent Porcelain Checking from Heat.**—Fire checking of porcelain facings has been a great annoyance to me ever since I have undertaken to make a bridge or crown with porcelain facings. By the following method I have overcome this difficulty:

First, back your facing with very thin platinum, gage 36 (standard); and second backing, gage 30 (standard). Now, before placing this over the pins in the facing, put on a thin piece of gold foil, three thicknesses of No. 4, then the thinnest platinum, No. 36, coat very thinly with borax, then place on the No. 30, press tightly down to the facing and bend the pins over to hold in position; then trim all off, not allowing any of the backing to lay over the facing, but keeping them independent of each other, and before final backing see that they do not touch; leaving a very small space between each backing. Now invest, remove all wax around the teeth and the space left between the first backing; pack closely with gold foil; be sure not to let any borax come in contact with the facing, and this is overcome by packing in all the space between the caps. The foil being packed in this manner, the solder will flow all over alike as it makes a connection and leaves no places for the solder to jump, but makes it nice and solid with the gold foil. Also place a small roll of foil between the porcelain facing and the cusps, and force it down tight, and there will be no space left on the top of the facing after the bridge is flowed, and also allows for the expansion of the metals, as the soft foil is between the porcelain facing and the solid cusp.—J. L. Harkinson, in *Odontological Journal.*

271. **Porcelain Tooth-Crown with Gum.**—Fit a platinum collar and cap to the root-end, and perforate the cap

to allow a platinum post to be pushed through in the root and project a little from the cap. Select a pinless, plate, rubber, or other porcelain crown; fit, articulate and wax it to the cap and post, and remove for vertical investment in just enough plaster and marble-dust or asbestos to hold the parts together. When set, remove the wax and fill with porcelain body, dry thoroughly, and biscuit about three minutes in the furnace. So soon as cool enough to handle, carefully cut the investment away from the crown and the cap, add body to fill the cracks, and fuse in the furnace. If the gum has receded from about the neck of the root, gum-enamel can be modeled over the collar, and the final firing (with but one investment) will produce a very artistic restoration of both crown and gum, to be mounted with cement as usual.—W. M. Sharpe, in *Cosmos*.

272. **Tool for Bending Crown Pivots.**—I desire to suggest a plan which I have used, whereby the barbed pivot, with the screw on the end (which had been secured in the root with amalgam) may be bent without danger of defacing or injuring the screw. A small instrument may be easily made of a piece of iron wire, as will be better understood by the following figures:

The sectional view represents a screw-thread cut on the inside. The slot "A" is made to facilitate the cutting of the screw-thread within, which for amateurs is somewhat difficult without it, the thread corresponding to the one used on the pivot. When desirous of bending the wire or pivot at the proper angle, screw the instrument on to the pivot, and the bending may be done without fear of bruising the threads, which, on the platinum wire used for the pivot, is very easily done, as that metal is quite soft. Two of these instruments will be required, one for the thread used on large centrals

and cuspids; the other for small centrals and laterals.—Theodore F. Chupein, D.D.S., in *Cosmos*.

273. **Temporary Crown.**—Grind broken stump of natural tooth down to near gum border; take an English plate tooth that suits the space, and for a post, a stiff piece of roughened wire flattened at one end. At the flattened end file two small notches in opposite edges, for the pins of the tooth to be bent in to hold the wire firm. This makes the crown, and can be set with gutta-percha or "absorbent cotton" wrapped about the wire and put up the root canal; the swelling of the cotton holds it firm in the root, and can be easily removed and reset each time we have to treat the root. Any of my patients who have had to wear this crown have been well satisfied with it. The first one I used was in the case of a gentleman who had just broken off a dead root central. I set him one, and in thirty minutes he was back at work in his store.—J. F. Simpson, in *Dominion Journal.*

274. **Rapid Fitting Crown Bands.**—After shaping end of root take the measure with a loop of fine wire held in pin vise and twisted till tight, remove and slip it down on an old mirror handle or other tapering, elongated, conical-shaped piece of wood or iron, working it carefully as far as it will go; mark its position by scratch with a knife passing around; remove it, cut open, straighten ends, cut strip of gold slightly shorter, bend around and solder to form band, and slip band down on the stick or mandrel. It should be found a trifle smaller than the circumference at the mark. If larger it will, of course, be necessary to cut open and shorten it. If much too small, slip over end of your small anvil or handle of some instrument, plugger for instance, and tap carefully with riveting hammer till stretched to desired size. I use my gold 29 gage, 23k., and cut the strip from one-half to one line short, thus always permitting a little hammering to stretch band to required size. The band when complete to fit to root should reach just above the mark, never quite to it, or past it, to allow for stretching of wire in removing it from root and slipping on to the mandrel, and will almost

always be found to fit at once, and tightly, thus saving your patient the annoyance and pain of repeated trials, and yourself a considerable amount of time. The cap and pin are completed in the usual manner. It seldom requires more than one to one and one-half hours to complete cap and pin, to the point of taking the impression.—Vincent Fischer, in *Dental Review.*

275. **The Yoke Crown.**—Dr. George T. Baker, at the American Academy of Dental Science, exhibited a device which he uses to insert a tooth, temporarily, when one has been extracted. It consists of a yoke of thin platina wire, the two arms of which bend over the teeth adjoining the space to be filled. A plate tooth is ground to fit the gum and rest on the yoke; the tooth is backed with platina and soldered, and finally tied in place with floss silk.—Items.

276. **To Repair Pivot Crown.**—It sometimes happens that an artificial tooth crown mounted on a pivot breaks off, leaving the pivot firmly fixed in the root, from which it may be for several reasons impracticable to remove it. In such a case I employ an engine trephine (Fig. 1) to bore a groove, C, in the root end A, Fig. 2, around the pivot, B, to a depth consistent with the strength of both the pivot and the root. A hole, D, is then drilled in the palatal part of the root end to the same depth as the groove around the pivot. From a gold or platinum tube of the size of the trephine, a section,

Fig. 1.

Fig. 2.

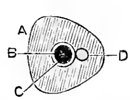


Fig. 3.

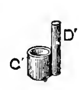


Fig. 4.

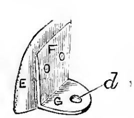
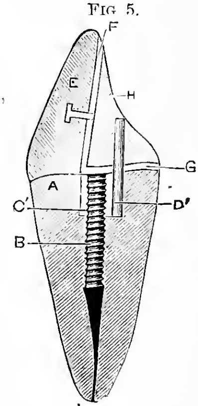


Fig. 5.



C′, Fig. 3, is cut and soldered to a piece of platinum wire, D′, which just fits the hole D in the root A, Fig. 2. The tube and wire are then put in place, and the tube made flush with the pivot and root end. A plain tooth, E, Fig. 4, is selected, ground, and backed with platinum, F, so

that a part of the backing may be bent and cut as shown at G, to the shape of the root end, and drilled at *d* to fit over the wire D′, Fig. 3. Hard wax is then melted to unite the backing to the wire, so that all may be withdrawn from the root, invested, and soldered to form a contour which, when subsequently finished, will make a strong, smooth crown-back, H, Fig. 5, which shows in section the several parts of the crown as reset with suitable thin cement on the pivot and root before described. It is obvious that such a crown is secure in its seat, and a number of them so set have proved the method to be a success.—Emil Amend, D.D.S., Metz, Germany, in *Cosmos*.

277. **Making a Double Cap Crown.**—After adjusting a gold crown on a tooth remove it and wind around it a piece of paper, which fasten with a clamp or string. Slipping the paper band off, pour in Mellotte's fusible metal and immerse it in cold water to cool off, and have a die on which to adjust a telescoping cap. On this wind No. 30 to 32 pure gold wire, one piece being left higher than the rest, and which bind over the top of the crown.

Remove this and solder, adjusting it to the crown-like die. Outside of this solder a narrow strip of No. 32. If there is any fear of the solder getting inside of the telescopic cap, it can be painted with whiting which prevents the solder from flowing where you don't want it. When all is ready, melt a little fusible metal in a cup, and drop the crowned-die in it, and the gold crown will float to the surface. Pick it out, and if a little of the fusible metal still adheres, immerse it in nitric acid, which will remove the last particle. It is then ready to be adjusted to the crown in the mouth. This will be found a clean and most accurate method. —G. Evans, in *Southern Journal*.

278. **Varnishing Teeth Before Crowning.**—Dr. C. V. Rosser uses shellac varnish on live teeth to be crowned to overcome sensitiveness.—Items of Interest.

279. **Perfect Fitting Gold Crown.**—The whole crown is cut off almost even with the gum; there will still be a thin portion of the enamel left surrounding the root, and this can easily be removed by using the No. 2 and No. 3 scalers.

Around this conically shaped root (the removal of the enamel alone will generally shape it sufficiently) fit a 22k. gold band so as to come in contact with all parts of the conical portion of the root, which gives us a conical band. To make this band, make a tin-foil model. From this an absolute shape in gold is obtained more quickly, and a saving of gold results. This band is soldered with 22k. solder, then placed in position and its free margins ground down even with the root end.

Next prepare the band for a pure gold floor by taking a Butler corundum point and hollowing out the upper or small end by beveling from the inside edge, so as to allow room for the solder. Though only an infinitesimal amount of solder runs inside, still we must have a place for that little to flow; otherwise the band could not go back in place, on account of the solder flowing inside, and we must have the solder to flow inside in order to make a complete cone externally. Now take a piece of pure gold (No. 34 American gage) and cut just a little larger than the band, anneal it and adapt it perfectly, then place the two in a No. 7 Melotte soldering clamp, and be sure they do not move; place borax all around the overlapping edge of pure gold, place a small piece of 22k. gold solder at the junction of the band and floor.

Now make the pivots (of platinum and iridium wire), and roughen them before placing them in position. Drill holes corresponding with the root-canals, place the pivots in position and fasten them to the floor with prepared hard wax. Now remove carefully and invest pivots, floor, and band in equal parts of plaster and marble-dust, and after removing the wax with boiling water, solder the pivots to the floor with 22k. gold. Now cut down the overlapping pure-gold floor exactly even with the band, also cut down the projecting ends of the pivots. This constitutes the foundation for a solid gold crown. Never make pivots for

canals which cannot be thoroughly filled with cement. It is better to shorten the pivot somewhat and make it thicker, and depend for anchorage only on the lower part of the canal.

Now put the foundation in its position in the mouth, (upper jaw, for example), and take an impression of the whole upper jaw in modeling compound; also take an impression of the whole lower jaw. Next remove the foundation, and place it with great care exactly in its proper matrix in the impression just taken, then stay it to the modeling compound with wax in two or three places; be careful not to move it with the wax-knife, dry the pivots and band on the inside, and cover the pivots with a film of wax; also run a film of wax around the band on the inside, but be sure to remove all wax from the edge of the band, because we want that to rest firmly on the plaster. Now fill the impression with plaster to make a model.

After separating the model, remove the crown-foundation from the model by making a hole, usually on the palatal surface, with a pocket-knife, through the plaster to the apical end of the pivot. Now place the model and foundation in hot water, and with a little pressure on the end of the pivot the whole foundation is easily removed. Syringe out all wax from the model and foundation, and replace the foundation on the model.

Next make the stamp for a grinding surface; use for this pure gold, 34 American gage. The molar or bicuspid stamp is made in the usual way by placing the pure gold, always well annealed, on a piece of lead and striking a few light blows on the die, which gives a perfect grinding surface.

Next trim off all surplus gold. The cusps are next filled with 22k. solder. The reason we use 22k. solder is, when we fill in the whole space between the grinding-surface and the foundation with 20k. solder, there is no danger of the 22k. being melted out of the cusps, and consequently no danger of having an air-bubble just under the grinding surface of No. 34 pure gold, which, of course, would make itself visible after a few days' use.

Having taken a full impression of both upper and lower jaws, we are able to get an absolutely correct articulation. We now add wax to the foundation, which can be removed from the plaster, till we get an exact articulation with the pure-gold grinding surface. After having gotten this with hard wax so that it may be manipulated without disturbing its position, we continue to build out the tooth to its anatomically correct contour with wax, frequently trying it in place. After the foundation is removed from the plaster, the plaster is cut away from between the foundation and the adjoining teeth without disturbing the plaster on which the band rests. When this plaster is removed, wax is added up to the very edge of the band, so that the entire anatomical contour can be restored with gold, including even that of the enamel chipped off at the cervical margin. The wax tooth should always be tried in the mouth, to be sure that everything pertaining to form, contour, and position is just right. This was the object of removing the foundation from the plaster model at the outset, as it is a great advantage and particularly so with facings, to always just at this time try the tooth in the mouth.

Now from a piece of tin foil (No. 60) a model is cut so as to fit the wax exactly. We cut the gold on the palatal surface from the height of foundation, thereby enabling us to join the free ends at the cervico-palatal surface. The large ends of gold we turn out and back, so as to stay it in the investment of plaster and marble-dust. The gold can be cut a little long, so as to allow of bringing the cervical ends together. This cervical margin is very important. This gold band must fit just under the edge of the grinding-surface stamp, and in perfect contact with it, so as not to allow the grinding surface to move. This little thickness of pure gold, No. 34 American gage, must be allowed for when we wax up the tooth.

Now we have the wax tooth thoroughly boxed in, excepting the palatal surface. Before taking the next step, be sure that the pure gold band for boxing is in contact with the cervical margin of the foundation band. At the point

of junction here, and at the grinding surface, place a little wax, and then cut all possible surplus away, leaving only the very junction filled; also be sure no wax gets on the inside of the cervical margin of the foundation band. Now place the tooth in water and invest it in plaster and marble-dust, covering the whole tooth except the palatal surface of the crown; the plaster must just cover the narrow gold joined at the cervical margin. After the plaster sets, boil out the wax and cut the investment as small as possible, leaving the plaster only about one-eighth of an inch all around. Now dry thoroughly, but not in contact with a flame; have something—a top of a tin box for instance—between the flame and the tooth. After it is dry, place it in the flame of a small Bunsen burner. To hasten the heating-up process, a foot blow-pipe may be used to get it red-hot very quickly, but, nevertheless, the heating-up is to be done cautiously, and during this time we still have the little Bunsen flame under it. Now, by applying the flame of the Knapp blow-pipe, the gold flows with the greatest ease in all parts and in all directions, like melted butter. Here we use 20k. solder. We about half fill the molar with gold, using borax as a flux, before we use the Knapp blow-pipe.

It should be observed that we have the solder almost to the melting point, everything is red-hot, and a hot flame beneath the investment, so that when we gently apply the Knapp blow-pipe flame the gold simply drops, and while in this molten condition we add the rest of the solder, never allowing it to cool for one moment, for if it does air bubbles will result. Here the gold boxing band at the cervico-palatal margin does its work beautifully; the gold flows freely all around, with no danger of solder running inside the foundation from the palatal side. The plaster and marble-dust should always be worked as stiff as possible, so as to always have the gold in contact with plaster, which will not be the case if the investment is mixed thin. The necessity of having everything firmly held, so that the gold solder will not pull it in and change the entire shape of the crown, becomes evident when the large amount of solder

used is considered. This being a solid crown, we put it in water to cool it, and next in sulfuric acid very dilute, and gently heat it to remove adhering oxid. Now we can shape the gold to anatomically correct contour lines, and bring the cervical margin down to a feather-edge, so that when again placed on the root we have an absolute junction without a lodging-place for acids, and the whole tooth restored to a state of perfection.—LeHand N. T. Shields, in *Cosmos.*

280. **Removable Bridge.**—In the anterior teeth we utilize only the root, trimming down in the ordinary manner for setting a Richmond crown, with one exception, and this is the advisability of slanting the root from the labial to the lingual surface, to allow of as high a ledge in the rear as circumstances will permit, trimming the band on the labial surface to almost the gum margin. Next we solder a flat cap over the band and trim down the edges accurately. We next enlarge our pulp canal as large as possible to still retain sufficient strength, and turn our attention to the pin, which is made of either gold clasp metal or platinum and gold. Taking a heavy wire, bend about double, and inverting the loop end down, add 20 or 22k. gold to the loop by melting till we have quite a ball or knob as large as the top of our root will admit, trimming this pin up to loosely fit the root. We next make a tube of No. 30 platinum to fit the pin accurately, soldering the tube with pure gold. Puncturing the cap of one root protection we drive the pin and pin-covering through as far in the root as possible. We will have a little surplus of the platinum sheath or tube, which we split in several places and burnish down to the cap. Next carefully removing the pin to not displace the tube, we remove the root protection with the tube, and invest upside down, being careful to fill the tube with the investment, and thereby keep the solder out, heating up the investment solder altogether. We now proceed to make a Richmond crown for the platinum covering of the root, being careful not to let the band impinge on the gum, as its removal and subsequent replacement a number

of times daily would start up a serious gum irritation. We do not consider the pin at all in making the crown, but make it pinless, and when the whole piece is complete trim the top of the pin to a round center, and thread in your screw plate, and place in the root tube, drop a piece of wax in the center of the crown, press to place. This will mark the position of the pin, and allow you to take a drill the size of the screw and drill a hole in the crown, and then thread the hole same as the pin. We can now screw our pin in and rivet at the top, and any subsequent repairs made with very little inconvenience.

In the posterior attachment we allow the inner band of platinum to extend nearly as high as the natural tooth was, leaving only sufficient space between the band and articulating teeth to allow of quite a heavy solid gold cap, capping the band in the usual manner, *flat.* Make the pin as heavy as possible and cover with the tube as described for the anterior crowns.

With the exception that we make the ball at the top much heavier and the pins separated much more, and make a partition wall in our tube to fit between the two prongs of the pin, proceed to connect the tube and root covering as described, and, after polishing, set with cement to place. I neglected to state that this tooth covering should always be made smaller at the top than at the gum margin.

We next make a telescope crown of 20 or 22k. gold to fit this inner platinum sheaf, trimming off flat at the top, and next mold a solid gold cap to make a thorough articulation with the corresponding teeth.

A very nice method of obtaining a perfect articulation being to pound a bullet in your die-plate, on the tooth you desire, file flat and lay on top the cap, and allow the patient to close the jaws firmly. The opposite teeth will press in the lead easily, and allow you to trim down with a knife.

When perfect, drop a little sticky wax on a round stick and place the lead on it, and proceed to mold your cap in the cuttle-fish bone as usual. By this method you have no grinding of the cap after finished.

Soldering the cap now to the telescope band, we have our anchor complete, with the exception of the pin in the cap, which we screw and rivet to place.

We are now ready to consider the attachment of the intervening or bridge teeth. Here we are allowed a variety of methods. The only stipulation I would make is that the gum should be saddled to allow it to assist in standing the strain.

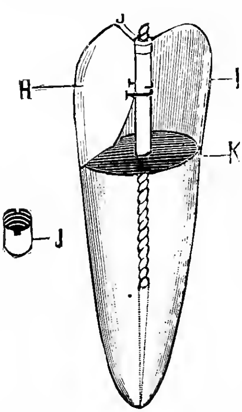
We can swage a rim of gold to fit the gum quickly by taking a plaster impression and drying out; flow in fusible metal and proceed to burnish the rim to place, which can readily be done by annealing a few times. Soldering the saddle to the two anchors, and a few cleats on the saddle, proceed to vulcanize the teeth to the saddle in the ordinary manner of attaching to a gold plate.

Again, in the lower jaw, we make a very inexpensive case by attaching the dummies together with Watt's metal, and soft solder this to the two anchors.

Again, by simply soldering a strong bar of gold or platinum between the two anchors—vulcanize the teeth between.

If you want more elaborate and extensive work, swage your rim, back your teeth and solder to the saddle, rim the labial surface, and you have a whole gold case.—Van Fossen.

281. **New Porcelain Crown.**—The accompanying illustration shows an easy but strong way of constructing a crown. A good strong screw is anchored in the root in the usual way and snipped off to suit the articulation of the occluding tooth; then a thin tubing of iridio-platinum is slipped down over this screw, and a piece of thin platinum (K) of sufficient size to slightly more than cover the end of the root, with small hole cut in the center, is slipped down over the tubing, and burnished to nicely fit the root and over the edges, and caught to the tubing



with a little plaster and sand; when hard, slip the two off

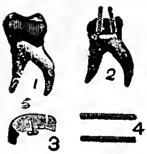
together, in their relative positions, and solder. Place them back again on the root, the soldering process having softened the metal, complete the burnishing to a nicety, and get an impression in plaster with tubing and plate in position. Before filling the impression place a piece of German silver wire in the tubing, of sufficient size to fit snugly, leaving the end projecting one-half to three-fourths of an inch—this to prevent the disturbing of the tube or crushing it in bending the pins in tooth (H), around it; from this impression you procure a model with the tubing in exact position. Now grind and fit the artificial tooth (H) to this, wax fast, invest, bend pins around the tubing, and solder. Having removed the German silver wire, the enlarged portion of the tube at the grinding surface to receive the circular nut (J) is made by using a larger piece of tubing, and placed in the proper position after the first baking, and the body placed about it to hold while baking, and the second baking completes the crown, as shown in cut (H); the artificial tooth, and (I) the porcelain added. This when cemented to the screw and root, and the nut driven home while the cement is still in a yielding condition, makes a very strong and substantial crown.—E. C. Moore, D.D.S., in *Archives of Dentistry*.

282. **Crown Holder.**—A handy contrivance for holding a shell crown while filing, shaping, etc. Take a piece of round wood of suitable length and size; melt and drip on the end a few drops of sealing wax. When desired for use, warm the crown and force it in the wax. The crown can thus be held firmly and will not get out of shape.—Wm. H. Steele.

283. **A New Crown Band.**—A new method in making a band. Use platinum gage 30 to 36: the band is made wider than necessary after it has been fitted and soldered with pure gold, the portion projecting beyond the end of the root is clipped and bent over, so as to cover the end, being neatly malleted with a plugger, to properly fit the root. It can then be soldered to any pin-tooth by simply pressing the

pin through the platina, or it can also be used without soldering it to the tooth, as the cement will hold it in place.—Dr. E. Parmley Brown, in ITEMS.

284. **Alloy Crowns.**—Prepare the canals as carefully as for any crown; firmly anchor two Howe screw posts (with cement) in the roots, having them long enough so they will extend to within 1-16 inch of the articulating surface of the crown (Fig. 2). Now fit to the roots a thin platinum band, which should be wide enough on the buccal portion to reach above the posts. Next, before the band is permanently adjusted, solder to it a T-shaped bar [see sectional view of band 3], and solder to band as shown in cut; this should be long enough to embrace both screw posts. Be sure that the band fits the tooth closely in all parts, just below the gum-line; then set it firmly in position, with the T grasping the screw posts. Now mix about one-third enough "white gold and platina alloy" for the crown; do not squeeze out too dry. Begin filling by working the alloy well in around the edges, around the posts, and cross bar. Next mix enough alloy to complete the crown, squeeze as dry of mercury as possible, and complete the work (Fig. 1). At a subsequent sitting, thoroughly dress, and polish the entire crown.—William H. Steele, in *Dental Tribune.*



285. **Bridge for Close Bite.**—Perhaps the simplest expression of the bridge is the one constructed of solid gold. Where the bite is close, there is nothing that acts so well for strength and cleanliness as a bridge of this character.

We will take, for illustration, the lower jaw, as we seldom make them for the upper. Having prepared the individual solid-gold crowns previously described, place them in position on the roots and take an impression of the whole jaw. Place the crowns in their matrices in the impression and stay them to place with wax. Pour the model with plaster and marble-dust. You now have the crowns firmly held in position. Take also an impression of the upper

jaw, place the models together, and you will have an exact articulation. Next make the grinding-surface stamps for the teeth to serve as dummies, and fill in these with 22k. solder. From a piece of No. 60 tin foil cut a pattern for a pure gold floor. Place this gold far enough away from the gum to allow for convenient cleansing. This gold floor should exactly fit the space between the abutments of the bridge. Also have enough thickness between this floor and the superior teeth for strength. Stay the floor with hard wax to the crowns to be used as abutments, flowing the wax above and below the floor at its attachments to them. Now place the grinding-surface stamps in position, getting the proper articulation by raising them and filling in with wax. Wax up accurately to form, and place a strip of pure gold along either the buccal or the lingual surface. Do not fail to have the stamps cut with projecting edges on the buccal and lingual surfaces for the purpose of staying them in the plaster investment, which will prevent their falling. Also leave the edge of the floor somewhat exposed, *so that it will not rise when soldered.* The gold strip which was placed on either the lingual or buccal surface, as the case may be, answers a valuable purpose if nicely adjusted, not only to make the gold flow in all parts, but to hold the floor and stamps exactly in position.

The adjustment of this strip depends on the side chosen for the soldering. It is to be applied to the buccal side if the soldering is done lingually, or *vice versa.* Now cut the plaster away, except that which holds the bridge, make a ring, and invest in plaster and marble-dust. Roughen the plaster model and soak it in water before investing any further, to secure a firm attachment of the investment added to the model. Next wash out the wax with boiling water and dry thoroughly. As the crowns are soldered with 20k. solder, the entire space between the crown stamps and the floor must be soldered with 18k. The solder flows in the position occupied by the wax, which was placed above and below the pure gold floor in staying it to the abutments, and it will finish like the inside of a watch-

case. The bridge here described will give permanent service and be altogether comfortable. We use this method where the bite is close and where porcelain facings would be neither necessary nor expedient.—*Extract Cosmos.*

286. **To Enlarge Hole in Pivot Crowns.**—To drill or enlarge the hole in pivot crowns, I use a copper mandrel with corundum powder and glycerin.—G. V. Beacock, in *Dominion Journal.*

287. **To Make Natural Crown Dies.**—As you meet with a patient, or one possessing a complete set of natural teeth, of medium size and normal development, beg the privilege of an impression of both jaws in modeling compound. Make a plaster cast of each, and trim so that duplicates can be made in zinc or hard brass counters in lead or tinner's solder. From these dies gold caps can be swaged, anatomically correct for every tooth. Two or three of these cheap dies, will meet almost every requirement.—W. S. Elliott, in ITEMS.

288. **Porcelain Tips.**—A porcelain tip made from a plate-tooth, properly selected as to color, ground to fit the edge of the natural tooth in such manner as to give the proper outward appearance, a platina pin fitted to extend up in the roots and attached to the porcelain tips, the palatal surface filled in to proper contour with backing, and solder or porcelain body baked on them, the tooth cavities filled with gutta-percha, and the tips heated and pressed home have given me good satisfaction. This I feel to be a conservative operation much preferred to cutting off the whole crown down to the roots, and crowning by any of the methods usually employed.—G. V. I. Brown, in *Review.*

289. **Crown Holder and Pin Protector.**—In the process of grinding the neck of the Logan crown to adapt it to the root, one is apt to grind also the pin. To avoid this I place over the pin a tube like that of the nut-driver (Dr. Howe's pattern) shown in the accompanying cut. The crown is held on the thumb with the

forefinger over the end of the tube, which protects the pin from chance contact with the engine corundum wheel while the crown is being ground in the usual way.—F. A. Roy, M.D., D.D.S., in *Cosmos*.

290. **Cutting Off Teeth For Crowning.**—A rapid and easy method of cutting off teeth preparatory to mounting crowns, is to open in the pulp canal; then with a sharp oval bur revolved by the engine, cut from within, outward, on the line with the gum margin, rotating the hand piece, so as to cut equally as possible in every direction from the pulp canal. Most of the after-work on the end of the root can be done more rapidly with this bur, than with stones.—W. T. Martin, D.D.S.

291. **Burning Holes in Crowns.**—Some one complains that in preparing one of the Rynear's crowns he burnt a hole through the gold in trying to spread the solder. Those who are familiar with the use of gold solder on gold will know this is possible with any solder and gold. For instance, when solder flows within the Rynear crown, at a point where it is not desired, and a further effort is made to displace it by reheating, so that it will flow to the place originally intended, the effort will be futile; for the solder having once flowed becomes a part of the crown itself, and, to flow again, it must of necessity result in the melting of the portion of the crown to which it has been attached.—Items.

292. **Rubber Porcelain Crown.**—This is, as far as I know, original with myself; but be that as it may, it makes but little difference, the crown has given good satisfaction where it has been tested. For purpose of illustration, we will take a lower molar. When the canals have been properly cleansed and prepared, trim and shape the root as for any other band crown. Then take measurement with binding wire, and make a narrow gold or platina band. (Figure 1.) Adjust the band to the tooth; it should

be a good close fit and extend just below the free margin of the gum. Fill the band with wax, keep it dry and

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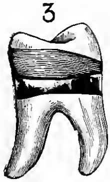

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take a bite. In removing the bite, the band should come away with it; but if it does not, replace in its position in the wax, and mount in the articulator in such a way as to retain the band in place after the wax bite is removed. When the plaster sets, warm and remove wax. With base-plate wax for the body, and a porcelain cusp (Fig. 2), for the articulating surface, build a perfect crown. When shaped to suit, take the model carefully from the articulator, being careful to keep all in proper position. Flask the model, so it will open, with porcelain cusp in one-half of flask, and band in the other; wash out the wax and pack with Ash-white, or the pure uncolored rubber, and vulcanize. This crown can be mounted either with posts fixed in the roots, or with posts vulcanized in the crown. If the former, set the posts in the roots permanently, and with a bur cut a place in the rubber crown to receive them, and mount with cement as usual. If to be mounted with fixed posts, the posts should be placed in position, removed with bite and band; flasked and vulcanized in the crown. Fig. 3 shows the crown complete and mounted.—Wm. H. Steele, in *O. Dental Journal.*

293. **Preparing Root for Crown.**—In preparing a root for a porcelain-faced crown I have been much pleased in the use of a little instrument devised by Dr. Taggart, and that is an ordinary fissure bur with a round shoulder soldered just far enough down to give required width of gold band. This is for the purpose of cutting through the alveolus on the proximal sides of the root, thus permitting the band, when made, to extend further up under the free margin of the gum, and when the crown is completed no gold whatever is in sight.—A. W. McCandless, in *Ohio Journal.*

294. **Narrow Bridges.**—In a great many narrow bridges, where you want a very little plate, but still a very

stiff appliance, a large flow of solder over a platinum and iridium wire, finished round or half-round, makes a very stiff and rigid plate.—Dr. Moffat, in *O. Journal.*

295. **Band Attachments for Bridges.**—When a bridge-piece is to be attached to an anterior tooth, the crown of which is so sound that excision and crowning are not justifiable, I make a band as described in the accompanying illustration :

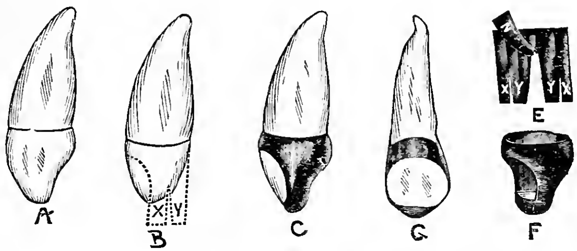


Fig. A represents a cuspid, to which I wish to anchor one end of my piece. B, the same with cusp squared and sides ground to receive the band. The dotted lines representing the band fitted at the neck of the tooth. The labial side cut out, and the sides and back extending so far below the cutting edge that when the ends XX (Fig. E) are bent in they will exactly meet at G.

Fig. E shows the palatal side of the band, properly cut for correct adaptation. The ends XX are gently malleted to position, using long handle plugger (No. 304) and lead mallet. YY are then bent and malleted forward to overlap the ends XX, and Z to overlap all.

The band is now carefully removed and large pieces of 20k. gold solder are placed over the joints on the inner side and fused in the flame of a spirit lamp, the solder sinking and leaving the inner surface of the band comparatively smooth. Contour the outside with a small, fine, corundum wheel, and you will have a beautiful shell or semi-cap shown at Figs. F, C and G, useful alike on incisors or cuspids. In preparing the tooth, grind cusp and sides, part way up, square. Cut out labial side of band so as to leave the ends

XX extended slightly forward of the labio-cutting corners. Split the band, between X and Y, at the palato-cutting corners and a trifle above the end of the tooth. Make the "V," at the back, full wide; because the flap Z will cover any space.—Grant Mitchell, D.D.S., in *Ohio Dental Journal.*

296. **Fitting Post Crowns.**—I have found it an advantage in making a close joint in the mouth, to place on the pin a disk of tin plate, then driving the tooth to place, the point of contact is indicated on the disk, and the crown can be ground accordingly.—H. Lowry, in *Review.*

297. **To Repair Bridges Without Soldering.**—In repairing broken porcelains in bridge-work without soldering, drill holes through the backing from the front, and countersink the palatal surface; then, with a special instrument a screw thread is cut on the pins of the porcelain facing, and the same securely held, when placed in position, by nuts on the countersunk side.—Dr. T. A. Bryant, in *Ohio Dental Journal.*

298. **Fitting Collars for Crowns.**—Take single-rooted teeth, to which a porcelain-faced crown is to be attached. We would, before attempting to trim the root, shorten it almost as much as necessary, and then with safe-sided files, sandpaper, disks, corundum points, and the various forms of scrapers give the root the desired shape. With No. 34 soft iron wire now take an accurate measure of the root. From this a band can be made, and if we have remembered the shape of the measure as it came from the tooth, it can be made to proximate the desired shape with slender pliers. This can now be forced on the stump, and such portions as would go too far under the gum can be cut away, so that it extends beneath the gingival at every point alike; and if the root has been properly shaped, the extreme edge of the crown will fit the closest. The stump and band may now both be ground down together, using a stone that will cut the proximal sides as well as through the center of the tooth.. The

reason for not shortening the stump to the necessary height at the start is that the difficulty of an accurate measure would be greatly increased.

The procedure in fitting the band for an all-gold crown is necessarily much the same, though it is well to contour the band till there is sufficient knuckle to touch the adjoining teeth after the crown is finished, thereby preserving the interdental space.

One word more about the preparation for gold crowns of teeth which need little or no trimming, as they taper from gum to grinding surface. Something more than the thickness of the collar should be cut from the buccal surface of the tooth, and after the collar is properly fitted, small V-shaped pieces may be clipped from the end that is to be closed, and the edges of the gaps brought together so as to touch. These will easily solder up as the grinding surface is being attached. In this way glaring gold will be less conspicuous.

In cases of molar teeth, where there is enough recession to expose the depression between the roots, a groove may be cut from depression to grinding surface that will permit us to bend in the collar with pliers, out of the mouth, and then put it in place. If the teeth are too sensitive for this, 24k. gold may be used for the band, as this can the more easily be burnished in the depressions as the crown is being set.

Would that I could always make such accurate fits, like some whom I have heard discuss this subject, that a piece of silk would not catch on the edge of the collar. Many bands go too far under the gum, and if we err either way it would be better for the tooth if the collar stopped just a little short than to go too far.

The farther we get beneath the gum the harder it is, generally, to obtain good adaptation, and the more liable are we to have the band standing off at some point, thereby becoming a constant source of irritation, and, as a consequence, in a short time there is the swelling and tenderness characteristic of the pinched gum pedicle, and we being unable to relieve this permanently without removing the cause, our work is likely to prove anything but a joy.

Wherever collars or partial crowns are used for the support of bridge-work, the less of the tooth that is covered, to secure the necessary strength, the better it is for that tooth.

Too much cannot be said in condemnation of letting such collars extend beneath the gum like ordinary crowns, to become, in a short time, a source of irritation by jumping up and down on the teeth. For instance, a gap on the upper jaw, extending from the first molar to a sound cuspid. On the attachment to the molar all are agreed, but when it comes to the cuspid there is a diversity of opinion. A perfect-fitting collar, slightly broader on its lingual than its labial surface, extending just to the largest portion of the tooth, is indicated almost every time. These may be made by burnishing a piece of gold directly on the tooth which has been previously pinched around it by flat-nosed pliers, taking out small pieces where it is inclined to pucker. But what looks to be a better way is to make a perfect die of the tooth, and around this shape the collar to fit.—W. K. Slater, in *Headlight.*

299. **Moving Roots Before Crowning.**—This is a device by Dr. Sillito for regulating, or changing the position of a root that was to be crowned. The device consisted of a small piano-wire spring, anchored to the root, by means of a Howe screw post, and exerting pressure on the adjoining tooth in the direction desired.

The particular case on which Dr. Sillito used the appliance is illustrated by Fig. 1. A central incisor root which crowded the adjoining central was to be crowned; the lateral was missing and the space partially filled by the cuspid coming forward. To crown the root in its crowded position would have necessitated grinding the mesial face of the central. To obviate this, Dr. Sillito inserted a

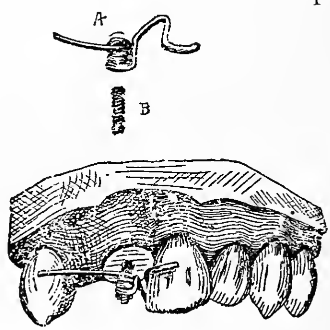


Fig. 1.

Howe screw post (b) in the root's canal; cut off the screw head, and constructed a small spring (a). The drawing shows the appliance in position. By this means he succeeded in moving the root to the position desired.—*Ohio Dental Journal.*

300. **An Original Bicuspid Crown.**—The following way of making a permanent crown (porcelain) for broken-down bicuspids is original with me:

Prepare root as in Richmond crown; fit band and solder top on it, making a small cap over root. Punch a hole in this cap large enough to allow the pin of a Logan bicuspid crown to enter. Grind porcelain to set close to cap, making a good joint, then solder in place. Mount as a Richmond. You have a strong, artistic piece of work.—J. Harbin Pallock, D.D.S., in ITEMS.

301. **Setting a Genese Crown.**—Prepare the root and canal in the usual manner, take an impression so as to obtain a model that will give accurate articulation.

FIG. 1.

Post.

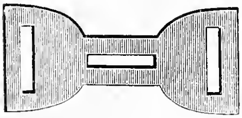
Choose the crown suited in form and color to the case. Select a post (Fig. 1) that will fit the canal easily and tightly. Having the model prepared, grind the crown to fit the root and articulate with the opposite tooth.

Fill the apex of the root with any substance which the operator has found to be the most serviceable, to prevent the cement from being forced through the apex. Place the post in the canal and try the crown on the root with the post in position; if the post be too long file it off till the platinum lining of the crown and the post touch with the tooth in the desired position.

Dry the tooth and post. Fill the platinum cup in the tooth with Fowler's Sticky Wax. Warm the post, tap it in place in the tooth, and finally adjust as you desire. Cool the tooth with water, so as to harden the wax in the cavity, and then carefully remove the tooth and post.

Mix any investing material, press the tooth in it, and with it cover the tooth, except the cavity, letting the holder (Fig. 2) support the tooth invested in the lower part, the end of the post coming through the slot. By putting the investing material over it, the post and tooth will be held securely in place, as illustrated in Fig. 3. This will leave the end of the tooth and post clear to view.

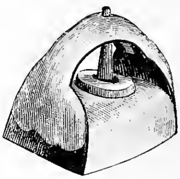
Fig. 2.



Copper Holder.

When the investment is dry, pour boiling water over the wax, to remove it from the cavity, which should then be clean and dry. Add the flux. Put thin strips of solder around the post touching the platinum lining. Gradually heat the investment, and when thoroughly dry, solder.

Fig. 3.



Tooth invested, showing use of holder.

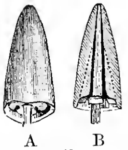
When the crown and post are ready for cementing in position, dry the root canal. Rub up some amalgam dry; mix a sufficient quantity of oxyphosphate of zinc; add to this an equal bulk of the amalgam and work up together. This will give a slow setting cement of great density, and one impervious to moisture.

These teeth will not crack on rapid cooling, and are ready for inserting five minutes after soldering. They may be ground in any form, and repolished.

The post may be barbed, and it may be found advantageous to insert a wooden point in a plugger or any mallet, and with it give a few taps, which will drive home the crown securely, and in the right direction.

A frail root can be successfully crowned by using a disk of gold or platinum cut in star shape with a center hole slipped over the post and soldered in place (Fig. 4). This will steady the post and crown without undue pressure on the sides. The fine part of the post will reach the apex, and the collar will support the base of the root. The openings in the collar will allow the escape of surplus cement.

Fig. 4.



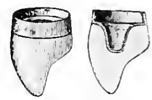
A B

A.—Frail root with pin and collar in position.
B—Sectional view of A, showing how collar supports the post.

A band (Fig. 5), can be put on these crowns in the shortest space, having no overlays on the crowns, yet soldered so thoroughly as to leave no weak point or space for entrance of moisture.

If desired to band instead of pivot, fit the band to root, having the crown adapted also. (No need of the band overlapping the crown.)

Fig. 5.



A B

A—Crown banded. B—Sectional view of A, showing platinum cup.

Take a plain disk of soft platinum or gold larger than the root, place it over the end of the crown and burnish it on, puncturing the center and turning it in the platina cup. The band is then placed on and waxed in position, invested, and the band, disk and tooth soldered together.

When trimmed up, the lower edge of the band is flush with the top edge of the tooth, leaving the crown clear of metal, and only the narrowest band required on the root, with no possibility of moisture entering the space.

If the root canal is curved, use flexible drills for cleaning. Anneal the pivot post, apply a little vaselin, and gently tap it in place; it will conform to the direction of the canal, and can be withdrawn for soldering.

If the platinum lining is filled with wax before grinding it prevents moisture or dirt from getting in it; and when warmed for fixing, the post is sure to be held tightly in position.

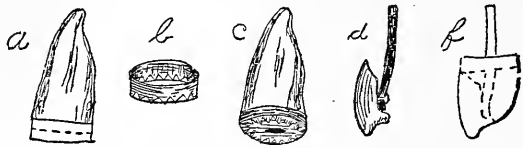
By making the investment high, it becomes easy to direct the flame around the tooth, making it hottest first, thereby forcing the flow of the solder in the cup.—Items.

[I consider this one of our best all porcelain crowns.—Author.]

302. **The Downey Crown.**—The process of making is as follows: The tooth root is prepared as for a Richmond crown, and a band of platinum fitted to the root and soldered with pure gold.

The band is made wide enough to project a little beyond the end of the root, as shown in cut, Fig. *a*; the dotted lines representing location of end of root. The platinum band is

then notched, as represented at *b*, replaced on the root and the protuding points bent in and burnished over the end of the prepared root, as represented at *c*. A tooth of suitable



size, shape and shade is next selected (either an ordinary vulcanite tooth, or a so-called plate-tooth may be used), and an iridio-platinum pin, to extend in root canal, is fastened to the tooth by bending tooth pins around it. This is represented at *d*. The band and tooth are then adjusted to the root, and sticky wax used to hold the parts in position. Band and all are then removed from root, Fig. *f*, invested as usual (powdered silex being preferable to marble dust), wax thoroughly boiled out, porcelain body applied, molded to shape of crown desired, and baked. The porcelain enamel is extended over the band so that when completed it is one of the most cleanly and natural looking crowns made. This same method may be employed for anchoring bridges.—Dr. L. L. Barber, in *Ohio Dental Journal.*

303. **Hint on Anchoring Bridges.**—Where I have used a metal cap for the anchorage of a bridge at one end, instead of cementing the bridge in at the other end, supported by a cuspid, for instance, I have cut the tooth and put in a very hard gold-filling, making just a little depression. Drill a little cavity in the cuspid, and pack the gold very hard; countersink; point, and let it rest right in there. There is no chance of its decaying the tooth. It has worked very nicely in every case that I have tried.—F. A. Peeso, in *Ohio Dental Journal.*

304. **Perfect Occluding Gold Crowns.**—Often cases present that irregularity of occlusion which renders the ordinary use of the various dies in the market useless. Among the various expedients in such cases the following may suffice:

Fit the band to root and trim on the occluding edges, with flat file, to line where side walls begin to curve on occluding surface. Return band to root and fill to overflowing with plaster of Paris well-mixed, so as to set quickly. Have patient close teeth together naturally. When plaster is hard, remove band and trim, so as to make presentable surface retaining the imprint of the occluding cusps. Use this model for making an impression in Mellotte's Moldine, from which make a fusible metal die. Perfectly adjust to the band, the resulting swaged cap, and solder. Finish. A perfect occluding crown will be the final result.

Another Way.—Fill band with moldine or plaster and proceed to get "bite" as before, then insert this model, in fusible metal almost cold, and drive gold-plate in this mold with lead.—W. H. Whitslar, M.D., D.D.S., in *Ohio Dental Journal.*

305. **Crowns Where Roots are Missing.**—The insertion of a crown where the root is missing; without a plate; clasps; destroying nerves in adjoining teeth, or resorting to modern bridge-work, may seem hard to accomplish, but can be done in the following manner: A gold-plate is swedged to cover the space and made long enough to lap well over on labial and palatine surfaces of the gum. Prongs are then soldered to the sides of the plate opposite the adjoining teeth, and the post for the crown in its proper position.

If there are fillings in the adjoining teeth, remove them. If no cavities, make them.

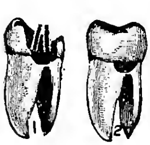
Thin dam is adjusted, leaving no gum exposed. Floors of gold are laid covering the cervical walls of the cavities. The plate is placed in position with the prongs projecting well in the cavities. With a forked instrument held in the left hand straddle the post and press the plate firmly against the gum, and hold in position till the operation of filling the cavities is completed. After the fillings are nicely finished, the dam is removed and a Bonwill crown adjusted in the usual manner.

In this operation there are no backings to interfere with

the articulation, and where properly done it is practical.—C. M. Sharp, D.D.S., in *Practitioner*.

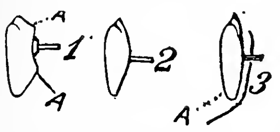
306. **Slipper Shell Crown for Bridge-work.**—This crown is used mostly for incisors, but can be adapted to cuspids or bicuspids. Take measurement of tooth with wire and make a plain tube, solder in the back only as far as the tooth is straight; now take an impression of the tooth in plaster, and run a fusible metal die. Place the tube on this die, and burnish the loose flaps down to the tooth; or by previously cutting out a V-shaped piece in the back, you can place it on the natural tooth or die, and work out with a sharp instrument that part of the labial or buccal surface you wish to remove. Now with curved scissors cut this portion out, and also all the proximal sides which extend below the end of the tooth, which should ordinarily be one-eighth inch. Now burnish the back or lingual flap up over the cutting edge, and it will, if done properly, make the only perfect fitting slipper crown with the least amount of labor. Where incisors are badly decayed on both proximal and lingual sides, I build the tooth to proper contour with good cement, and make the above style crown, which shows a great deal less gold than it would were the cavities properly prepared, and filled *with gold.* This is often advisable, where the tooth is very frail or brittle, and you do not wish to devitalize and crown with a Richmond or Logan.—C. L. Smith, D.D.S.

307. **Alloy-gold Cap Crowns.**—Many frail bicuspids and molars (decayed below gum line, Fig. 1) are extracted every day without any attempt to save them; that by the following plan could be made permanently serviceable. After getting the tooth and nerve canal in a healthy condition, seal up the apex of the root with a gutta-perch point, drill out the canal and set two Howe screw posts with cement (see Fig. 1), dress away all ragged edges of the cavity and shape for filling. Now put on a matrix metal band as



described above; mix the alloy, and before squeezing out the mercury, divide the mass and squeeze one portion much drier than the other; begin the filling with the part containing the most mercury, and complete with the dry. At a subsequent sitting remove the band, and shape the tooth for a gold cap crown, fit the cap and mount with cement as usual; *being sure* to let the gold cap extend below the gum line (see Fig. 2). A crown mounted in this way is durable and strong enough to carry a reasonable amount of bridge-work.—Wm. H. Steele.

308. **Backing and Soldering.**—To avoid cracking, never leave any angles on back of facing such as (*A A*, Fig. 1), but grind them off rounding something like (Fig. 2). In this manner you avoid the uneven expansion and contraction of porcelain, and also in tipping do not burnish or allow gold or backing to extend up over face of tooth, but to entend out straight as (Fig. 3) the contraction breaks the facing at *A*.



Press pins on common cardboard till they leave a print, then punch holes with plate punch, put on tooth, trim for pattern, then cut gold (24k. 28 gage) and press with rounded instrument to saucer shape; place backing on tooth, cut off pins with nippers, split in center and rivet on; after placing on cork or some soft substance. Now grind, file and burnish backing to desired shape and position, invest and flow solder. Make investment thin and solder on charcoal; heat and cool slowly; always heating investment nearly to fusing point of solder before directing flame on solder or backing. Another important point is to place your borax on, in solution, before you begin to heat up. Slightly scratching surface of metal with sharp instrument makes solder take hold more readily.—C. L. Smith, D.D.S.

309. **A Holdfast For Porcelain Inlays.**—Methods hitherto adopted for holding porcelain and glass inlays in their

place having failed, the following plan was carried out to my satisfaction. But first let me say the etching with hydrofluoric acid held good, and for a long time, put in irregular inlays and contours, but it was likely to burn off the fine edges or etch the surface where not properly protected by wax, a difficulty not always overcome. I now adopt the following plan: Get my impression of the cavity and edges with number 30 to 60 gold foil, when thoroughly fitted, fill with hard wax, heat by spatula, and press to fit tightly. Remove and invest in Teague's Compound as lightly as possible. When dry, burn out the wax by laying the imprint wax down on a piece of plaster to absorb the wax as melted; this leaves a true mold of the cavity and edges, and no force to displace the mold. (No need to have the investment outside the gold over lap.) Now take some waste gold foil, roll it up to form a pellet that will lay inside the cavity about one-half depth. Put the porcelain or glass mixture in quite wet, and press and dry with bibulous paper, then burn it in the usual way, each firing till perfectly formed and full enough. It should be a little below absolute fusing point or enough to thoroughly shrink the porcelain without vitrifying it till the last layer. On removing the investment and pealing off the gold, the little pellet can be picked out, and a nice depression, with undercut edges, will be formed for the cement to enter and firmly hold the inlay in place.—Dr. D. Genese, in *Ohio Dental Journal.*

310. **An Original Crown.**—The root is prepared as usual for an ordinary porcelain crown. With a very fine drill, preferably one with a gage, a series of holes is drilled as near as practicable to the circumference of the root, and the interspaces cut out, forming a groove in the face of the abutment. A band of 28 or 30 gage, 24k. gold, is fitted to this groove and ground off to the base of the root.

To the band is soldered a flat cap of pure gold, 34 gage, using as little solder as possible, 20k. This is replaced in position and burnished to the face of the root. It is then

punched and a platinum post placed in position, secured with hard wax, inverted and soldered, the cap being trimmed accurately to the outlines of the root end. A plate tooth is then backed with gold as follows: The tooth is ground at the gingival end to fit the cap and beveled from pins to cutting edge. From 34 gage, 24k. gold, a backing is cut slightly longer than the tooth which is punched, placed in position in the tooth, and held by bending the pins. The gold is burnished thoroughly to the tooth and slightly over the square end of bevel of cutting edge.

Another backing is cut, long enough to burnish over the articular edge to thicken the gold at this point, in which a number of holes are punched to insure perfect union in soldering.

All the parts being placed in position, it is carefully waxed up and inserted as usual for soldering.

It can be claimed for this crown that it is less bulky and more shapely than the old ferule crown; exposes no gold at the gum margin; allows a much more favorable and accurate adjustment with regard to other teeth; can be used when convergent or divergent roots are to serve as abutments for bridges; is especially adapted to conically shaped roots; causes less pain in adjustment, and will not irritate the pericemental membrane. It is extremely cleanly as the joint between gold and tooth; can be made about perfect. The band and cap may be made of platinum and a porcelain backing baked, producing a highly esthetic crown.—Dr. J. H. Crossland.

311. **To Remove a Waxed-up Bridge.**—To remove a waxed-up bridge from the mouth, without changing the position of the teeth or the articulation, or bending the piece when there are several dummies, fill a bridge-work impression tray with quick-setting plaster, and invest it over the bridge as it is in position in the mouth, removing the bridge in the plaster. It is then held in perfect position, invested, ready for soldering. Always place a pillow or cushion of wax, first of all, from one cap crown to the

other, on the ridge, letting the teeth bear on the wax, and preventing the suspended crown from sinking down and bearing on the ridge.—Dr. Crenshaw, in Items.

DEPARTMENT D.

DEPARTMENT D.

312. **Selecting and Keeping Dental Medicines.**—While there may be many other things to modify the action of drugs, or the result of their application, we believe many times negative results come through the use of inferior medicaments. There are many impure drugs in the market, especially in the smaller towns; drugs that are either adulterated or have undergone a change from exposure or long keeping.

Some of the dental medicaments that have been found adulterated are:

Arsenious acid, adulterated with lime salts, chalk and other substances.

Creasote.—It is very difficult to obtain a pure beechwood creasote. Much of the so-called creasote has been found to consist of crude carbolic acid, to which has been added creasote and phosole.

Essential oils are often adulterated with fixed oils, oil of turpentine, chloroform, alcohol, or essential oils of an inferior grade mixed with those of a better quality.

Aconite tincture is one of the most uncertain remedies in regard to strength that we use. The commercial article may be strong, weak or sometimes almost inert. This variation is due to varying quantities of the alkaloid used in its preparation. That prepared from the root is many times more powerful than that prepared from the leaves. The officinal tincture U. S. P. contains 40 per cent aconite strength; Fleming's tincture has 79 per cent; the German 10 per cent; the British 16 per cent; the French 20 per cent; so that care should be used in the selection and use of this remedy.

Terebene, as found in the shops, is often contaminated with resin, turpentine, etc.

Cocain salts may contain organic or other impurities.

Zinc Salts.—These may contain impurities of lead, copper, iron, aluminum or alkaline earths.

Hydrogen peroxid has been found to contain varying quantities of sulfuric or hydrochloric acids; some samples contain also boric acid and barium. The purer the solution the less liable is it to decompose, and this is in a degree independent of the strength of the solution and the temperature at which it is kept. Solutions of the commercial article, however, are very unstable and should be kept in glass stoppered bottles, protected from light and heat. Hydrogen peroxid, ordinarily obtained, gives up a part of its oxigen at a temperature of about 34° F., and the amount is increased in proportion as the temperature is raised. Hence the necessity of keeping in a cool place, such as an ice-chest or water-cooler.

Among other drugs used in dentistry that are affected by light, heat or exposure may be mentioned:

Bichlorid of Mercury—Solutions.—They are gradually decomposed on exposure to light or in contact with organic matter.

Aristol is decomposed by exposure to light and moisture.

Europhen is affected in the same manner.

Dialyzed iron is affected by age; thickens, etc.; the solution not remaining potent after being kept for five or six months.

Amyl nitrate is a very volatile liquid, and its alcoholic solutions rapidly deteriorate.

Myrtol evaporates at ordinary temperatures.

Iodin slowly volatilizes at ordinary temperatures if exposed to light and air.

Eugenol, exposed to the air, becomes darker in color and resinous.

Terebene, if exposed to the air, absorbs oxigen and is changed.

Cocain solutions are unstable, and soon decompose on exposure to light.

Tannic acid, exposed to moist air, gradually changes,

and aqueous solutions, when exposed to air, mold, ferment and are converted to gallic acid.

Permanganate of potassium, in the presence of moisture, gives up the oxigen it contains and becomes binoxid of manganese.

Essential oils, if pure, are not affected by exposure, but those ordinarily obtained thicken and become resinous on exposure to air.

Ethyl chlorid is volatile at the ordinary temperature.

Nitrate of silver is somewhat affected by exposure to light and air.

Glacial phosphoric acid, if exposed to air, absorbs moisture and is changed in consistency.

Sulphate of zinc is slowly effervescent in dry air.

Aqua ammonia, if exposed to air, readily deteriorates.

Thus we realize the necessity of keeping medicaments in well-stoppered bottles and in a dark, dry and cool place, to preserve them. If we are careless in this matter and allow our drugs to deteriorate, we cannot expect satisfactory results from their use.—*Ohio Journal.*

313. **Incompatibility of Medicines.**—This subject can only be glanced at here. The following simple rules may help the burdened memory of the practitioner:

Never use more than one remedy at a time, if one will serve the purpose. Never use strong mineral acids in combination with other agents, unless you know exactly what reaction will ensue. They decompose salts of the weaker acids and form ethers with alcohol. Select the simplest solvent, diluent, or excipient, you know of, remembering that the solvent power of alcohol and water, for their particular substances, decreases in proportion to the quantity of the other added. Never combine free acids with hydrates or carbonates.

Generally, do not combine two or more soluble salts.

The following variably insoluble salts will be formed whenever the materials of which they are composed are brought together in solutions: The hydrates, carbonates,

phosphates, borates, arseniates, and tannates of most earthy and heavy metals and alkaloids, and the metallic sulfides; the sulfates of calcium, of lead, and of the subsalts of mercury; the chlorids, iodids, and bromids of bismuth, silver, lead, and subsalts of mercury; the iodids of quinin, morphins and most alkaloids.

Alkalies, precipitate the alkaloids and the soluble non-alkaline metallic salts, and (also metallic hydrates and carbonates) neutralize free acids.

Silver nitrate, *lead acetate*, *corrosive sublimate potassium iodide*, should nearly always be prescribed alone. The first with creasote forms an explosive compound. *Aconite* should never be given except in a solution with water.

Silver nitrate, and *lead acetate* and subacetate, though incompatible with almost everything, may be combined with opium; the latter forming with opium a compound which, though insoluble, is therapeutically active as a lotion.

Corrosive sublimate is incompatible with almost everything, and should be given in simple syrup; even the compound syrup of sarsaparilla is said to decompose it.

Tannic acid, and substances containing it, are incompatible with albumen and gelatin. *Tannic acid*, iodin, and the soluble iodids are incompatible with the alkaloids and substances containing them, and with most soluble metallic salts. Vegetable infusions are generally incompatible with metallic salts.

Glucosides, such as santonin and colocynthin, should not be prescribed with free acids or emulsion.

Dangerous compounds, because poisonous, are: Potassic iodid with potassic chlorat; hydrocyanic acid or potassium cyanid with metallic hydrates, carbonates, subchlorids, as bismuth carbonate, or nitrate, or calomel.

Explosions would result from the combination of powerful oxidizers with readily oxidizable substances, as potassium chlorat or permanganate with tannin, sugar, sulfur, sulfides, vegetable powders, glycerin, alcohol, tinctures or ether.—Potter, in ITEMS.

314. **Formula for Compound Investment.**—

Take by measure 1–16 part, pulverized soapstone;
3–16 Plumbago;
5–16 Asbestus, [grade No. 3,]
7–16 Plaster of Paris.

Mix thoroughly.

The above is the best known investing material for all purposes.—R. E. Zellers, D.D.S.

315. **Antiseptic Spray.**—

℞.—Antiseptic pastilles (Carl Seiler's Formula Pastilles) .. iss.
Aq. pura .... ℥ i.
Sol. Hyd. chlor. cocain, 4 per cent. .... ℥ ss.
Glycerine ....ad qs. ℥ ii.

Sig.—Use as spray.

Crush and dissolve the pastille first in water, boiling water is quicker, then add cocain. It will turn milky and cloudy. Add glycerin, which will immediately make the liquid clear. Spray nose, mouth and throat, and you will be safe. This spray is admirable to benumb sensitive gums, before using the gilling-twine to hold rubber-dam in place. It is exceedingly useful also in allaying irritability of soft palate in taking impressions.—Dr. A. C. Hewitt, in *Ohio Dental Journal.*

316. **Hamamelis in Dentistry.**—The medicinal properties of this drug are anodyne stypic, and mild astringent. I have found it one of the safest and best preparations for all inflammatory conditions about the mouth, that I have ever used. As a mouth wash after bridging; crowning; removing tartar from the teeth, etc. In a strength of one part hamamelis to two parts water it is valuable for tender bleeding gums—it may be used one part water to one part hamamelis. For hemorrhage following extracting, it is my first remedy, and nearly always controlls the trouble without resorting to anything stronger. I prefer Pond's Extract, as I found it the most uniform and reliable.—Wm. H. Steele.

317.—**A Good Anodyne.**—Dr. J. W. Jungmann recommends the following as an excellent obtunder for odontalgia caused from pulp exposure, after extraction, pain, etc.

℞.—Menthol crys. .... gr. v.
Tinc aconit .... gtt. xx.
Chloroform ....qs. ℥ ij.

M. Sig.—Apply on gum over the seat of trouble with a pad of bibulous paper. —*Ohio Dental Journal.*

318. **Naphthol.**—B. Naphthol is superior to carbolic acid or creasote as an injection in the sac of an alveolar abscess, and as a dressing for suppurating pulps. Its comparative freedom from odor and the absence of unpleasant after effects, if it comes in contact with the gums or lips, are strong points in its favor.—William Herbert Rollins, in *American Journal Dental Science.*

319. **Trichloracetic Acid for Canker.**—I am specially pleased to report, so far as my experience goes, that we have in trichloracetic acid an unequaled remedy for apthous stomatitis, or canker sore mouth. These mucous patches are often quite painful and annoying to both patient and operator. Ordinarily, one or two applications will be sufficient. In extensive cases, patients may be given a small bottle, and apply it for themselves. It seems to me that we can do the medical profession no better service than to call their attention to this remedy as a "specific" in this class of lesions. One application is sufficient to stop further progress, if used on first appearance of the lesion. I say this with considerable confidence, because I have succeeded where the physician has failed.—J. A. Dunn, in *Cosmos.*

320. **To Prevent Nervousness in Operating.**—

℞.—Potassium bromid.............................gr. xx.
Cinnamon water...............................℥ ij.

Administer thirty minutes before operating.

—Jno. S. Marshall, in Items.

321. Compound Listerin Obtundent.

℞.—Sol. hyd. cocain, 4 per cent..................fl. ℥ iij.
Glycerin..................................fl. ʒ ij.
Listerin..................................ad fl. ℥ iv. M.

—Dr. A. C. Hewett, in *Review.*

322. **Solutions of Corrosive Sublimate.**—A neat and convenient way to handle corrosive sublimate for making antiseptic solutions, is to dissolve three grains in one fluid drachm of alcohol, which, added to a pint of listerin, makes 1-2000, and undergoes no chemical change.—*Ohio Journal.*

323. **To Make Hands Soft and White.**—Clean, soft hands, whether old or new, are still useful. The successful, busy dentist must sometimes handle flask, file, forge, etc. His hands get soiled. Soap will not always whiten. The following is excellent:

℞.—Pulv. acidum boracicum.......................lb. i.
" Sodac carb.................................lbs. ii.
" Pumice.....................................lb. i.
Glycerin q. s. to form paste.
Sig.—Use as a soap.

—Dr. Hewitt, in *Ohio Dental Journal.*

324. **Formula for Dentists' Headache.**—For this we know of nothing better than Trosseau's formula for headache, which is composed of laurel water and cyanid of potassium.

℞.—Potass. cyanid...............................grs. iv.
Aque lauro cerasi..........................℥ iv.
Ft. solut..................................M
S.—Poison. Moisten a compress and apply to seat of pain.

—*Ohio State Journal.*

325. **Soldering Fluid.**—Chlorid of zinc, so much used in soldering, has, besides its corrosive qualities, the drawback of being unwholesome. A soldering mixture has been found which is free from these defects. It is made by mix-

ing one pound of lactic acid with one pound of glycerin and eight pounds of water.—*Office and Laboratory.*

326. **Detective Antiseptics.**—One of the great desiderata of modern surgery has been an antiseptic which would tell us when a part is antiseptically clean. This is especially so in the surgery of cavities, which can not be seen, as sinuses, normal canals, etc. We have two preparations which we can rely on as faithful detectives of the "we never sleep" variety. Marchland's peroxid of hydrogen, and potassium permanganate. The former, used in the fifteen volume solution, will cause violent effervescence if pus be persistent, and will continue to do so till all the pus has been destroyed. Potassium permanganate in a ten-grain solution (10 grs. to 1 oz. aqua), will turn from a bright purplish red to a dirty brown color in the presence of any disorganized organic matter. It is also available for testing the purity of water for domestic uses. The brown stains of the skin caused by contact with the solution can easily be removed by scrubbing with a weak solution of oxalic acid, to which a few drops of hydrochloric acid have been added.—*Medical Examiner.*

327. **Sulphate of Zinc as an Escharotic.**—Bartholow says that dried sulphate of zinc, made in a paste by the addition of a little starch and water, is a valuable excharotic, and free from the danger that attends many excharotics.—*Ohio Journal.*

328. **Lime Water for Sensitive Teeth.**—Lime water is another excellent remedy, given teaspoonful doses three or four times a day; it will afford relief to very sensitive teeth perceptibly. Another remedy with which I have obtained most happy results is bicarbonate of soda. This may be given in doses (compressed tablets) of from five to twenty grains three or four times a day, for a general alkaline effect. Locally it may be used in solution, two drams to eight ounces of water, or the soda itself may be applied to

sensitive teeth three or four times a day. The most gratifying relief, in cases of extremely sensitive dentine, is thus obtained.—Frank Abbott, D.D.S., in *Practitioner.*

329. **Creasote and Oil of Cloves.**—Equal quantities by bulk, is a polychrest remedy that I keep always in case for application to aching teeth, painful gums, ulcerous surfaces, and also where pulps are exposed. When a cavity is prepared for filling; I wipe out to saturation, the cavity, with this agent; being careful not to make it too dry before filling; leaving it as a disinfectant and coagulant in the bottom of the cavity, before the provisionary or permanent filling is inserted.—Dr. Shattuck, *in Archives.*

330. **Pyrozone for Inflammation.**—When the mucous membrane of the mouth or throat is inflamed, rinse the mouth and gargle the throat with pyrozone, then use to follow, a solution of boro-glycerin 1 to 10. This is effectual, and is a great soother.—*Review.*

331. **Collodion and its Uses.**—Collodion is a saturated solution of gun-cotton in sulfuric ether. There are two forms which the pharmacien provides for us; the one contractile, the other non-contractile. The contractile is that one composed of gun-cotton and sulfuric ether with a little alcohol, and the other is made of collodion, Canada turpentine and castor oil. They are very useful protections to irritable surfaces, such as are present in phlegmonous abscesses and sloughing ulcers. Where the inflammation runs high and the tenderness is great, we prefer to paint, with a camel's-hair pencil, the entire surface with the flexible, or second form of collodion. Where the inflammation is on the decline and we desire compression, we use the contractile, or first form of collodion, applied in successive layers with a camel's-hair pencil, till a sufficient amount of contraction has driven the blood out of the capillaries and whitened the surrounding parts sufficiently to satisfy us that the blood supply will now be controlled, and the patient have a comfortable time till the next visit.—*Archives.*

332. **Iodin with Glycerin.**—Tincture of iodin mixed with glycerin is claimed by Dr. Hammond to prove more effective as a local application than the plain tincture. This is due to the retardation of the dissipation of the iodin or, more likely, to the skin remaining soft, and hence in a better condition for absorbing the drug.—*Western Dent. Jour.*

333. **Local Anesthetic for Lancing, etc.**—I have also found the following good in minor surgical operations, such as lancing a felon, or removing a small tumor from the scalp or face: Take any quantity of alcohol, and add menthol till you have obtained a saturated solution, then add twenty drops of chloroform for each ounce of alcohol. Apply with a small piece of cotton, or spunk, allowing the air to get to the parts freely for from three to five minutes. Then operate.—Dr. C. H. Gillman.

334. **Vinegar and its Uses.**—Vinegar is another polychrest that I always keep in my medicine case; not so much for its direct action as vinegar, as for being a dilute acetic acid, and a solvent of carbolic acid and creasote, wherever they have been used in excess of our desire for their action on the tissues. Wherever we dress fistulous openings with tents on which we have used caustic paste, carbolic acid, or creasote and oil of cloves, after pushing the tent in the depth of the cavity and excising it at the mouth, we swab out the excess about the mouth of the fistule with a strong vinegar, so as to prevent sloughing of the territory beyond that immediately confined to the fistule that we desire to enlarge for further exploration.—Dr. Shattuck, in *Archives.*

335. **Iodid of Zinc** has been used for more than two years to disinfect pockets of pyorrhea alveolaris, in solution of 12, 24, 36 or 48 grains to one ounce of water, once in four days till pus has ceased to flow on pressure or can be detected by H_2O_2. The granular is used to sprinkle on apthous ulcers, to repair the *gingival margin* when ragged, slit or fungous; apply in full strength.—*Ibid.*

336. **For the Toothache.**—

℞.—Chloroform	10 drops.
Carbolic acid, ninety-five per cent	10 "
Glycerin	10 "
Morphin	1 grain.

M.—Use on cotton.

—J. E. Morse, M.D.

337. **Treatments for First Dentition.**—According to Dr. Monti (*Revue de Mal. de l' Enfance*), all interference with primary dentition should, as a general rule, be proscribed. Accordingly, he considers as injurious the ordinary practices, as, for example, biting on hard objects, bathing the gums with so-called emollient substances, etc.

The only necessary measure of precaution is to keep the buccal mucous membrane in a state of perfect cleanliness. It is best, then, during dentition, to wash the mouth several times daily, either with pure water or antiseptic solutions. Among the latter, the most efficacious are the following:

℞.—Acidi boracici	3.00 grammes (gr. xiv).
Aque distillate	200.00 grammes (℥ vij ʒ vj).
Tinct. myrrhe	2.00 grammes (♏ xiv). M.

Or,

℞.—Sodii salicylatis	3.00 grammes (gr. xiv).
Aque distillate	200.00 grammes (℥ vij ʒ vj).
Tinct. myrrhe	3 00 grammes (♏ xiv). M.

When the milk teeth have appeared they should be cleansed with a very soft brush, using either one of the preceding solutions, or a suitable dentifrice. The following, recommended by Zsigmomdy, gives excellent results:

℞.—Magnesii carb.	
Pulv. saponus. āā	10.00 grammes (ʒ iiss).
Pulv. ossis sepie	10.00 grammes (ʒ iiss).
Essentie menthe	gtt. iv. M.

In very young children the following mixture may be better:

℞.—Magnesii carb.	5.00 grammes (gr. lxxv).
Crete preparat.,	
Sodii salicylatis. āā	15.00 grammes (ʒ iij gr. xiv).
Essentie menthe	gtt. iv. M.

When the milk teeth commence to decay they should be filled at once, that they may be preserved as long as possible.—*Journal des Sciences Medicales de Lille*, October 4th, 1889, p. 341.

338. **Aromatic-Chloro Aristol for Dead Teeth.**—For the treatment of dead and infected teeth or roots of teeth, also for alveolar abscesses with or without fistula, is the name I have given to the following combination:

Aristol	1 drachm.
Chloroform	½ ounce.
Oil of cassia	10 minims.

Owing to its gummy nature, it cannot be used with a syringe, but with a smooth broach wrapped with cotton fibers it can be very readily forced through the root-canal, after properly enlarging it.

A blind abscess at the apex of a root can thus be successfully treated, even where there is no drainage; in fact, there is no need of drainage, one or two applications being all that is needed. I have treated teeth by this method now for over ten months, and I have the first failure to find or hear of. One application is all that is needed for an infected root-canal, and I find it a capital dressing for an exposed nerve before capping it.

Where I use the preparation for abscesses, I do not use anything else; there is no need of anything further. Be sure to get it through the apex of the root. When you want to apply the treatment the second time, pack the root-canal with cotton saturated with the remedy till the next sitting, and finally fill the root with chloro-percha, using cotton fibers that are damp with the preparation as a carrier for the chloro-percha. Should it go through the apex a little, it is better than to not quite fill to the end of the root. I shall be pleased should it prove to be as useful to my colleagues as it has been to me.—S. Clippinger, D.D.S., in *Cosmos*.

339. **Formulas for Pyorrhea.**—

Dr. Riggs' formula is as follows:

℞.—Carbolic acid	1 part.
Tinct. iodin	1 "
Glycerin	10 parts.

Rub well in a mortar, and gradually add chlorid soda, 6 parts.

Formula of Dr. N. Dodge, of New York, is as follows:

℞.—Acid sulphuric	ʒ j.
Water	℥ ij.
Soda biborate	℥ iv.

Formula of Dr. F. Y. Clark:

℞.—Carbolic acid	ʒ v.
Alcohol	℥ iv.
Glycerin	℥ j.
Oil pimentos	℥ iij.
Sal. red aniline	℥ ij.

The above remedies are used on pledgets of cotton same as other formulas, but care should be used in the Dodge formula to protect the surrounding tissues, as it is liable to produce eschar.

I have tried several other remedies, but found these the best. A number of my patients keep Dr. Riggs' prescription in their house, and many use it often, and would not be without it in their family, as it keeps the gums healthy and well when used according to directions.—L. Betts, in ITEMS.

340. **Antiseptic Adhesive Pomade.**—This is a very useful protector dressing for wounds of the face, etc.:

℞.—Oxid of zinc	gr. x.
Chlorid of zinc	gr. xiv.
Gelatin	ʒ x.
Water	℥ ij.

—*Scientific Am.*

341. **For Pains After Extracting.**—A potent and reliable remedy for the immediate after-pains of teeth extraction is amyl nitrit, the patient to inhale the preparation about three or four seconds, and then to sit still in the chair for about five minutes, or till the amyl nitrit has spent its

primary force. The remedy should be kept in every office, dental and medical, where anesthetics are used. A single drop of nitro-glycerin, one per cent solution, in half a glass of cold water, is even better than amyl nitrit, and more lasting in its effects.—Dr. E. H. Bowne, in *Cosmos.*

342. **Remedy for Hemorrhage.**—For stopping hemorrhage after extraction, the following is a safe and efficient remedy: Pack powdered slippery elm in socket, where tooth has been removed, as compact as possible. If necessary apply a compress. It is a good styptic. It has controlled hemorrhage after all other remedies have failed.—Elwood Tate, D.D.S.

343. **Cosmoline for Root Filling.**—We, in Brooklyn, have been converted by Dr. Van Wert to his method of filling root canals. He uses:

℞.—Iodol .... ʒ j
Oxid of zinc .... ʒ ij
Cosmoline .... q s.

Make into a stiff paste ; it requires dexterity to make it so.

—*International.*

344. **Blowing Powders in Roots.**—A small, pointed insufflator furnishes the best means of blowing powdered medicines in root canals or in the "pockets" around necks of teeth, left by the removal of tartar.—*Archives of Dentistry.*

345. **Chloralamid.**—It is said to be a reliable hypnotic to quiet the nervous system and induce sleep after surgical operations. It has no anodyne properties, and gives prompt, reliable results with absolute freedom from evil after-effects. It is prepared by combining two parts of chloral hydrate with one of formamide.—Items.

346. **Acid Phosphate Bad for Teeth.**—I have been noticing for a year or two past that something has been making fearful ravages in the teeth of my patients. I found that on every occasion of this my patient was an ardent

lover of "acid phosphate." I felt there must be some connection between this drug and the trouble with the teeth, so I determined to investigate the matter. To do this I got a supply from a druggist and dropped a tooth in it, and found that in thirty minutes it had formed a thin film on the outside of the tooth and the whole enamel was softened. In two days the enamel was as soft as the other part of the tooth, and the whole tooth could be crumbled away.

Such being the case, I thought it best to report it to this society, that others having patients using this drink might warn them of its deleterious effects.—Dr. Head, in *International.*

347. **Aceto Tartrate of Aluminum.**—This is another salt of aluminum possessing antiseptic, astringent, and hemostatic properties. It is a strong coagulator of egg albumen. It is useful for controlling hemorrhage after extraction of teeth, irrigating cavities, abscesses, infected wounds, as an application to congested gums, pyorrhea pockets, etc.—L. P. Bethel, M.D., D.D.S., in *Ohio Dental Journal.*

348. **Gutta-percha Cajeput Formula.**—Cajeput oil is said to be an excellent solvent of gutta-percha, and, if prepared according to the following formula, will be found useful for lining cavities and smearing root canals:

℞.—Cajeput oil,
Chloroform .... āā
Gutta-percha .... q.s.

—ITEMS.

349. **Eucalyptus and Thymol.**—Eucalyptus and thymol is a preparation containing borate of soda, benzoic acid, thymol oil of eucalyptus, oil of wintergreen, oil of thyme, oil of peppermint, and fluid extract of wild indigo. It may be used externally or internally. It is a non-coagulator of egg albumen. It may be freely used as a mouth-wash, root-dressing, general detergent, for cleansing the hands, and wherever a good antiseptic is desired. It may be used

freely about the mouth, as it is non-poisonous, non-irritating and not injurious to tooth structure.—ITEMS.

350. **The Best Local Anesthetic:—**

Cocain	5 gr.
Ext. witch hazel	℥ i.
Listerin	℥ ss.
Aqua. distilled	℥ ss.

Inject with a clean hypodermic syringe. Safe and effectual.—Dr. W. F. Johnson.

351. **Antiseptic Bath for Instruments:—**

℞—Alcohol	ℨ ij.
Hydronapthol	grs. xx.

Keep in quinin bottle, or one similar. Dip instruments in and lay away to dry. Will not tarnish.—A. W. Harlan, in ITEMS.

352. **Acetic Acid.**—A 7 per cent solution of acetic acid is a more effective germicide than bichlorid of mercury. —ITEMS.

353. **Hints on Using Cocaine.**—1. Amount of cocain used must be in proportion to extent of surface it is desired to anesthetize. In no case should the quantity exceed one and three-quarter grains.

2. Cocain should never be used in cases of heart disease, pulmonary disease, or in persons of highly nervous temperament.

3. In injecting cocain, the intradermic method it preferable to the hypodermic. By injecting in, not under, mucous membrane or skin, the risk of entering a blood-vessel is avoided.

4. During injection, the patient should always be in a recumbent position; in operations on the nose and throat, the head should not be raised till anesthesia is complete.

5. It is of great importance that cocain should be pure, since its combinations with certain other alkalies result in poisonous compounds.—*Brooklyn Medical Journal.*

354. **Disinfecting Power of Essential Oils.**—The essential oils are classified according to their strength as germicides, thus: Cinnamon, fennel, lavender, cloves, thyme, mint, anise, eucalyptus, turpentine, lemon and rose, the last two being very weak in disinfecting power.—*Bact. World.*

355. **To Control Dental Hemorrhage.**—In all hemorrhage in which the bleeding vessels are to be reached through the circulation, gallic acid is the most efficient, as its chemical affinities do not afford the impediments to its absorption as those of tannin, etc. My favorite prescription is:

Gallic acid,	dr. i.
Cinnamon water,	dr. ii.

S.—Tablespoonful every hour till bleeding is arrested.

Two or three doses usually suffice to produce a clot, and all the trouble is then over.

In connection with the above, the tooth socket should be gently but securely packed with tannin. For this purpose I use a saturated solution of tannin in water, saturating a pledget of cotton in the solution, and packing it firmly in the socket.

Persulphate of iron, either in solution or salt, should positively be discarded from the list of styptics as unreliable, on account of the frail clot it produces and the tendency to secondary hemorrhage following its use.—Dr. Otto Arnold, in *Ohio Journal of Dental Science.*

356. **Sulphate of Copper.**—*Treatment of Pyorrhea.*—The writer suggests the following plan of treating pyorrhea alveolaris: Bind a copper wire around the tooth or teeth affected and allow it to remain till a cure is brought about. The action of the sulfuric acid in the mouth will cause a slow but constant formation of sulphate of copper, which will settle in the pockets, and thus produce a cure by its ceaseless action both day and night. The wire can also be so arranged as to close the mouth of the pocket, and thus prevent the accumulation of the foreign substances which always so much retard successful treatment. If necessary

the patient can moisten the wire with a sufficiently weak dilution of sulfuric acid twice a day.—J. W. Whipple, D.D.S.

357. **Paste for Destroying Nerves.**—We have to depend largely on the prepared pastes sold at the depots. The difficulty in preparing a nerve paste consists in the insolubility of the arsenic, or the preparation of an impalpable powder. Experiments which I have made with an expert chemist, have only resulted in our getting a fine powder by dusting it through a cloth, after long pulverizing in a mortar. With one part of this powder I rub two parts of antipyrin and lanolin, to form a stiff paste. The lanolin, in a dry cavity, seems to penetrate the tissue, and to cause the antipyrin and arsenic to act, the first reducing actual inflammation of the part, and preventing further pain during the action of the arsenic.

A combination of—

Arsenic	1 part,
Antipyrin	2 parts,
Lanolin	2 "

makes a painless devitalization possible.—Dr. Bryan, *Office and Laboratory*.

358. **Silico Fluorid of Sodium.**—In my contact with the manufacturers, I am always on the look-out for new points of interest to the dental profession, and a year ago I presented to you an article, the silico-fluorid of sodium. It is non-poisonous, and can be given internally in doses of from five to ten grains, three times a day, without any injurious effect. That it prevents acid fermentation is also an established fact. Since I presented it, a year ago, it has been in constant use by the manufacturers of syrups for soda fountains, as it keeps them perfectly sweet. Lately, there has been a successful effort made to prepare them in tablet form, and, by the addition of the essential oils, to prepare a substitute for carbolic acid for use in the mouth. These now come in tablets, so that one dissolved in two ounces of water gives you the right strength to use as a

stimulant antiseptic mouth-wash. This is a very convenient form for use.—Dr. W. X. Sudduth, *in Mass. So.*

359. **Sozoiodol.**—Sozoiodol is a white crystalline substance freely soluble in water and alcohol. It contains iodin, carbolic acid and sulfur. It is free from odor and non-irritating. At present it takes high rank as a paraciticid, and ought to become useful in dental practice as a microbe destroyer.—*Dent. Review.*

360. **Root Dressing Formula.**—

℞.—Iodoform	40 parts.
Coffee (roasted)	10 "
Vaselin	50 "

Used as a root dressing.—*Review.*

361. **Formulas for Fusible Alloys.**—The following alloys melt in boiling water, and can be poured in plaster of Paris impressions without any more drying out than is required for varnishing with sandarac or shellac varnish:

Newton's.

Tin	3 parts.
Lead	2 "
Bismuth	5 "

Melts at 100 degrees Cent.

Rose's.

Tin	3 parts.
Lead	8 "
Bismuth	8 "

Melts at 95 degrees Cent.

Erman's.

Tin	1 part.
Lead	1 "
Bismuth	2 parts.

Melts at 93 degress Cent.

Wood's.

Tin	2 parts.
Lead	4 "
Bismuth	7 "
Cadmium	1 part.

Melts at 70 degrees Cent.

Erman's alloy can be easily made by taking equal parts of Plumber's half-and-half solder and bismuth.

This is very much like Mellotte's alloy, which is composed of

Tin	5 parts.
Lead	3 "
Bismuth	8 "

—Dr. John G. Harper, in *Dental Review.*

362. **Colorless Tincture of Iodin Formula.**—

Iodin	10 parts	by weight.
Hyposulphite of soda	10 "	"
Distilled water	10 "	"
Spirit of ammonia	16 "	"
Alcohol	75 "	"

Mix the iodin, the hyposulphite and the water together, and digest them at a gentle heat, shaking occasionally, till solution is effected. Then add the spirit of ammonia, and after a few minutes' shaking, the alcohol. Finally, set the mixture aside for three days in a cool place, and filter.—*Herald of Dentistry.*

363. **Iodoform Cotton Formula.**—This preparation, which has recently come in somewhat extensive use, is best made in the following manner. Take each ingredient exactly in the proportions given:

Iodoform	2 parts.
Ether	10 "
Strong alcohol	20 "
Glycerin	10 "
Purified cotton wool	30 "

Dissolve the iodoform in the ether and alcohol mixed; add the glycerin to this solution, and saturate the cotton wool with the liquid. Let it dry by exposure to the air. Draw the cotton out and keep it in glass-stoppered bottles, with wide mouths, closing well.—*Herald of Dentistry.*

364. **Medicated Cement Fillings.**—In this paper I advise, after an experience of two years in capping exposed pulps, the admixture of various medicants with the filling

material. The medicants used are: 1, creasote and oil of cloves; 2, eugenol; 3, deliquesced carbolic acid; 4, oil of cinnamon; 5, oil of cloves; 6, creasote pure; 7, creasote, oil of cloves and iodoform; 8, creolin; 9, campho-phénique; 10, potassium chlorate powder; 11, salicylic acid; 12, camphor pulvis; 13, stick sulfur pulvis; 14, iodoform; 15, oil of wintergreen.

The principle of medicinal action of the mixture, is the principle that, on the crystallization of the oxyphosphate, no further change takes place, hence the remedy may exert some of its remedial action. I employ mostly the first mixture (creasote and oil of cloves). When the medicament is a liquid, I add about an equal quantity of medicament and phosphoric acid, and when solid, about equal parts of medicament and oxid. These proportions may be varied as required. I believe that in this way the remedial agent is constantly exerting its effect on the walls of the cavity, thus resisting germ-action.—Dr. Charles B. Atkinson, in *American Dental Association.*

365. **Antiseptic Varnish.**—For lining a cavity, after disinfection, and before filling; it is the antiseptic on which I rely. The preparation being:

Tincture gum benzoin,
Acid carbol.. āā

This applied to the dry walls of a cavity forms an impervious antiseptic varnish, while it cauterizes and seals up the canaliculi.—Dr. Alfred T. Peete, *Am. Jour. Dent. Sci.*

366. **Creolin.**—I have lately been using creolin as a substitute for carbolic acid, for washing instruments and for general disinfecting purposes, and as a surgical dressing. I like it very much, as it is free from the disagreeable odor of the acid and is not poisonous. I am now using creolin gauze as a dressing for an antrum on which I operated lately, curretting a large patch of pyogenic membrane from the under surface of the infra-orbital plate. It keeps the wound

perfectly antiseptic and free from odor. It is used extensively throughout Continental Europe.

Creolin is a by-product in the manufacture of carbolic acid. It is produced by the addition of resin and soda to the creasote after removal from the latter of all carbolic acid.

It forms a dark-brown syrupy fluid, with a peculiar odor, somewhat resembling tar. Its taste is at first aromatic, and at last burning.

It is readily soluble in alcohol and ether. With water it is insoluble, but is suspended in the form of emulsion, producing an opaque milky appearance. The most complete emulsion possible is two and one-half per cent.

Creolin belongs to the most powerful antiseptics and disinfectants. As a deodorizer it is unsurpassable. It has hemostatic properties and promotes granulations. It is non-irritating, and internally is non-poisonous. It is used in form of gauze, ointment, soap or emulsion.—Dr. Fillebrown, *Odontological Society of Pennsylvania.*

367. **Sanitas.**—In "sanitas" we have the ideal disinfectant, and experiments appear to have sufficiently established its great power as a germicide. It is the most rapid of deodorizes, is harmless, can be given internally, has a pleasant odor and does not stain clothing. Its great value is shown in the fact that analysis shows a large percentage of peroxid of hydrogen, thymol, eucalyptol, camphoric acid, etc. It has considerable bleaching power.

I use sanitas oil for disinfecting all cavities to be filled, especially root canals. When first penetrating a pulp chamber I inject sanitas fluid freely, as also in root canals, by means of a bent hypodermic needle, a device shown to me by Dr. Wright. For treatment of ulcers, where an escharotic is not indicated, sanitas gives the best of results. But it has manifold uses. The sanitas toilet fluid is a delightful mouth wash, deodorizing the oral cavity without substituting any other odor. Used in a common atomizer, either of the fluids will remove all odors from the operating-room, rendering the atmosphere fragrant as that of the pine woods.

They will keep clean and fresh your spittoons and all vessels about the office.—Dr. Alfred T. Peete, in *American Journal of Dental Science.*

368. **For Sensitiveness After Crowning.**—It is said that europhen, when applied to gingival sensitiveness, caused by the setting of crowns or bridges, the soreness and irritation subsides promptly.—*Ohio Journal.*

369. **To Increase Solubility of Salicylic Acid.**—To increase the solubility of salicylic acid in water, the addition of one part of acid to one hundred parts of glycerin and one hundred and fifty parts of water gives the most satisfactory results.—*Ohio Journal.*

370. **Oxycyanid of Mercury.**—The comparative merits of oxycyanid of mercury and corrosive sublimate are to be summed up as follows: Its solution has a slightly alkaline reaction, and precipitates albumen only slightly. It is less irritant than solutions of corrosive sublimate, and solutions of the chemical 1-1500 do not attack, except slightly, the materials used in surgical instruments. When tested by the power of preventing decomposition of soup, its antiseptic power proved to be six times greater than that of bichlorid of mercury; whilst tested as to its power to destroy the micrococcus pyogenes aurens, the advantage lay somewhat in favor of the sublimate, 1-1400 of the former to 1-1300 of the latter. When employed on suppurating surfaces, or to render mucous surfaces antiseptic, it furnished much better results than the bichlorid, because of its much greater tolerance by the tissues and of the small amount absorbed thereby.—*Comptes Rend. de la Soc. de Biol.*

371. **Alumnol.**—An aluminum salt. It is a white non-hygroscopic powder, readily soluble in water, and suitable for application in various forms. Solutions may be from 1 per cent to 10 per cent. It arrests suppuration and secretion, and hastens the closing of wounds. Its use is indicated

in the irrigation of cavities, abscesses, infected wounds, as an application in pyorrhea pockets, etc. It is an antiseptic, astringent, a strong coagulator of egg albumen, and possesses hemostatic properties.—Dr. L. P. Bethel, in *Ohio Dental Journal.*

372. **Black's 1-2-3-Antiseptic.**—Various combinations have greater value than any of the constituents. Thus Dr. Black's favorite "1-2-3."

Carbolic acid	1 part.
Oil of cassia	2 parts.
Oil of wintergreen	3 "

has a range of antiseptic value greater than carbolic acid alone, without its evil effects.—*Dental Office and Laboratory.*

373. **Burns and Scalds.**—

℞.—Acidi salicylici	1 dram.
Olei Olive	8 fl. ounces.

M. Sig.—Apply to burn, covering with linen or lint.

—Bartholow.

374. **Salicylic Acid for Root Dressing.**—

℞.—Salicylic acid	40 parts.
Vaselin	60 "

Used as a root dressing.

—*Exchange.*

375. **Carbonate of Magnesia.**—Carbonate of magnesia, from ten to twenty grains, three times a day, will be found very efficacious. Milk of magnesia is another pleasant preparation for an antacid effect; it may be given in teaspoonful doses three times a day. If a laxative is desired, give a tablespoonful. It is a very excellent thing to mix a teaspoonful of this preparation with half a glass of water, and rinse the mouth several times a day with it.—Dr. Frank Abbott, *in Dental Practitioner.*

376. **Permanganate of Potash.**—Another preparation which is quite a powerful antiseptic is permanganate of potash, five grains to an ounce of water. It may be used very

much weaker than that with a germicide effect as well. As a deodorizer, permanganate of potash has no equal. You have here a solution strong enough to destroy living germs; not only that, but if there is any bad odor about the mouth or teeth, give it to your patient, very much diluted, to rinse the mouth with, and the odor is gone almost instantly. If you open a tooth the smell of which is offensive enough to drive you out of the office, you can destroy the odor instantly by simply applying to the tooth a little permanganate of potash solution.—Dr. Frank Abbott, *in Dent. Pract.*

377. **Powdered Resin.**—Resin powdered fine and sprinkled on a fresh cut or wound, and wrapped in a clean rag dipped in cold water, will prevent inflammation and cause it to heal kindly.

Powdered resin can be used in some cases for filling the roots of teeth, by working in the root and moisten or dissolve with alcohol, it is antiseptic and insoluble in the mouth.

Resin is very useful in the dental office for many things, such as putting around the necks of teeth to keep the rubber-dam from slipping, also for keeping the belts doing the same on the engine and laboratory lathe.—Dr. D. V. Beacock, *in Ohio Dent. Jour.*

378. **Carbolate of Camphor.**—Carbolate of camphor is made by adding one part, by weight, of carbolic acid to three parts of camphor, setting aside for twenty-four hours, and straining through gauze. It is a permanent liquid, with a specific gravity of 990. It is thoroughly antiseptic, and possesses unsurpassed germicidal powers. Locally applied to wounds, by means of cotton or gauze, it prevents suppuration. When kept in contact with the skin for several days it produces an eruption, which can, however, be prevented by mixing the liquid with oil. Injected hypodermically it gives the best results in aborting abcesses or boils and relieving pain.—*Therapeutic Gazette.*

379. **Nitro-Muriatic Acid** is useful to the dentist, in its full strength as aqua-regia, as an obtundent of sensitive dentine

at the necks of the teeth and as a controller of pain and as a solvent of apthous ulcerous patches in the mouth and mucous membrane; and as a corrective of the gastric juice in anemic and dyspeptic patients it scarcely has an equal, when administered from a phial in full strength, dropping from five to ten drops in a wineglass of sweetened water, just enough to make a nice kind of lemonade. It will control pain in the stomach; and indigestion, when followed persistently for from five to ten days, or till the digestion has so responded as to make one forget they needed a remedy. I merely mention this as a fact worthy of attention and adoption, rather than going into the philosophy of supplying the proper digestive fluids necessary to induce the proper ferment to perfect digestion in the stomach and *prima via*.—Dr. Shattuck, in *Archives*.

380. **Tincture of Chlorid of Iron** is useful to the dentist as a hemostatic and as an escharotic, applied to ulcerous patches, and never disappoints me, nor disturbs my conscience when I use it, even though it does come in contact with the enamel of the teeth; some of our brethren have been fearful of the ravages *supposed* to follow its contact with the teeth when administered by medical men as a tonic.—Dr. Shattuck, in *Archives*.

381. **Salicylate of Soda** is one of the remedies that will assist us very much when we have neuralgic and rheumatic patients, especially those whose neuralgia depends on a rheumatic diathesis. For inflammatory rheumatism it probably has no equal, when given sufficiently heroically to produce excessive diaphoresis and absence of pain and sleep. It may be well to state that there are some patients whose hearts are very much disturbed by heavy doses of salicylate of soda, and those who administer it should make observations, so as to either reduce the quantity or omit altogether its administration to such subjects. — Dr. Shattuck, in *Archives*.

382. **Sulphite of Soda** is a very pleasant, convenient and innocent remedy which should always be at hand to correct unpleasant odors in the mouth and throat, using it as a gargle ; and when the stomach is out of order, a little of it may be swallowed with benefit.—Dr. Shattuck, in *Archives.*

383. **An Excellent Varnish.**—Procure a piece of clear amber, scrape or powder it, dissolve in Squibs' chloroform, which will take some time, add a little absolute alcohol to delay evaporation, and you have a varnish so hard that it will resist almost anything.—C. F. Ives, in *International.*

384. **Formalin and its Uses.**—It is useful in chronic peridontitis and total necrosis, also in mouth operations, where the soft parts are concerned. In very sensitive patients, where tannin, iodoform or cocain were used, which showed unpleasant side effects, formalin showed no such action. A three per cent, solution, or mixture with pulv. gummis arabici or mastic is recommended in taking impressions and habituating to dentures. In its chemical composition it is nearest to antifibrin, and promises to become a useful local anesthetic in dentistry.—Dr. Arkovy.

385. **Suggestions for Using Pyrozone.**—The manufacturers of pyrozone, in order to more clearly identify these efficient preparations of peroxid of hydrogen, have adopted the general name of pyrozone, and designate their respective strengths by the percentage of peroxid of hydrogen which each contains, and one may be guided in their administration by this percentage value alone, as these pyrozones will be found to be uniformly true to their named values. The three per cent solution of pyrozone is aqueous, and so nearly neutral as to resist ordinary tests. Its range of use is as a mouth wash and gargle, and as an irrigating and detergent wash in abscesses, sinuses and ulcerating surfaces.

Of the methods for the exhibition of pyrozone may be named for the three per cent—in bulk one dram to one ounce or more, as the extent of territory demands, followed by an

equal bulk to twice the bulk of an alkaline solution, as soda bicarbonate one-half dram to water one ounce—also by injection per syringe, spray and inhaler, bearing in mind that all instrument surfaces in contact with the pyrozone must be of glass, hard rubber, platinum or gold.

About the necks of teeth and in pyorrhea pockets the five per cent may be dripped from an ordinary glass dropper, a drop at a time till sufficient effect is produced. An attenuated glass rod or even a tapered wooden probe may serve to carry a drop to place. In fistulas of alveolar or other abscesses cotton or other tents may be placed to carry the pyrozone well within the tract and avoid the distension produced by violent injection from a syringe.

The range of use of both five per cent and twenty-five per cent is suggested as follows, the choice between the two strengths being made from a basis of depth or rapidity of action desired, or occasionally the five per cent may displace the twenty-five per cent when the mucous membrane proves unusually irritable, when the five per cent will be much less painful than the twenty-five per cent.

Selection between these two strenths may also be made because the site may be minute or difficult of access, that is to say, where the pyrozone is to produce a deep influence through diseased tissue, or where the desire is to more rapidly clean a surface, or where the diseased site is small or more difficult to reach, the twenty-five per cent will usually better serve than the five per cent.

The general use of these ethereal pyrozones is in abscess pockets, fistulas or sinuses, fistulous roots, discolored teeth, pyorrhea pockets, removal of discolored and other surface deposits, catarrhal congestion of the throat, nasal passages and more remote mucous tracts and cavities by injection, spray, tampon or swab. Ulcerations yield kindly to the spray or swab. It is especially recommended to use a wash of bicarbonate of soda one-half dram to one ounce, to thoroughly bathe all mucous surfaces that have been acted on by pyrozone or other peroxid of hydrogen solutions, that no remaining surface acidity due to its activity may succeed.

Small quantities of the ethereal pyrozone should be used at a time. The hand will heat the instrument at times sufficiently to volatilize the ether and result in emptying the full charge of the instrument, sometimes to one's chagrin.—Chas. B. Atkinson, in *Ohio Dental Journal.*

386. **Cement for Mending Casts.**—Excellent cement for broken casts and models is made by mixing glycerin and litharge.—Genese, *Off. and Lab.*

387. **Glacial-Phosphoric Acid.**—This is an agent that enters in our oxyphosphate fillings, and has considerable action on the dentine tissues; one of which is at first to cause an unpleasant twinge, after which the cavity is so obtunded as to permit excavation with but little pain. From five to ten grains in a glass of sweetened water, is a grand tonic to a tired operator; when he is nervous and irritable; repeated every thirty minutes till he is supported, and may be well worthy our attention.—Dr. E. E. Shattuck, in *Archives.*

388. **Solder and Flux for Aluminum.**—A solder for aluminum is made as follows:

Tin	So	parts.
Zinc	20	"

To be used with a flux composed of—

Ssearic acid	So	parts.
Zinc chlorid	10	"
Tin chlorid	10	"

—*Engineering and Mining Journal.*

389. **Nerve Capping Formula.**—Dissolve sufficient gutta-percha in chloroform to half fill an ounce bottle. Add oil of cloves, 20 minims; tannin, 10 grains; carbolic acid, 20 minims. Seal and shake till satisfied of a perfeet mixture; then open and allow the chloroform to partially evaporate. There will remain a putty-like mass, which is always ready for application.—Dr. G. C. Anthony, in *Ohio Journal.*

390. **Sodium Fluorid as a Sterilizer.**—Sodium fluorid, the more it is used as a sterilizer, the more satisfactory it becomes. A saturated solution for instruments and broaches.—*Dental Review.*

391. **Phenate of Cocain, Local Anesthetic.**—Phenate of cocain is a preparation of phenic acid and cocain in nearly equal parts, and for convenience of further dilution is sold in 50 per cent alcoholic solution. This association of the carbolic acid with the cocain indicates against its hypodermic use. In its 50 per cent strength it will coagulate albumen, and its topical application to mucous surfaces will be followed by a slight slough. This may often be avoided by wiping glycerin over the dried gum surfaces before applying the 50 per cent phenate. The phenate 50 per cent may be diluted to any extent desired by adding alcohol and water equal parts. A solution thus made of 25 per cent strength will not coagulate.

Phenate of cocain is a local anesthetic of considerable service in extracting teeth. It is applied full 50 per cent strong (or diluted, if desired), on the dried gum about the tooth. A pledget of cotton forms a convenient means of placing it about the tooth, where it should be left in contact from three to five minutes at a time, to be repeated if anesthesia be not sufficient The patient should be cautioned not to swallow, and so avoid numbness in the throat, as the phenate promptly produces this condition in all mucous tissues. The phenate of cocain is more especially useful in operating in soft tissue, as opening abscesses, removing tumors, treating exposed pulps and kindred operations. It has the merit of being a powerful analgesic without the danger of constitutional impression.—Charles B. Atkinson, in *Ohio Journal.*

392. **Soothing Applications for Aching Pulps.**—Zinc oxid, carbonate of lime, and cocain, make a soothing application to an aching pulp, which hardens in a perfect capping for exposed pulps.—Genese, in *Office and Laboratory.*

393. **Chlorid of Zinc.**—This is one of the best germicides that we have, and is an antiseptic. It is the fluid in which the oxid of zinc is mixed for temporary fillings, so-called. Its special use is as a root filling, the object being to secure aseptic conditions of the cavity, enabling us to fill the balance of the cavity with whatever we please, and prolong the usefulness of the tooth.—E. E. Shattuck, in *Archives.*

394. **Sodium Peroxid for Bleaching Teeth.**—For bleaching discolored teeth I have used sodium peroxid in two different ways. First, by saturating the dentine with a strong solution, following this by treatment with a dilute acid. Second, by first neutralizing the sodium peroxid with an acid and afterward saturating the dentine with this neutral solution. The first has yielded the best results.—E. C. Kirk, in *Cosmos.*

395. **Saponaceous Tooth Wash.**—

White castile soap	3 ozs.
Oil of orange peel	10 mins.
Oil of cinnamon	5 mins.
Water	4 ozs.
Alcohol	12 ozs.

Shave the soap in ribbons; melt with the water in a water bath, adding the alcohol while still warm. Continue the heat if necessary till solution is effected. When cold, dissolve the oils in the liquid.—*Dental Office and Laboratory.*

396. **Celluloid for Filling Roots.**—Dr. George Allen uses celluloid dissolved in alcohol and ether as a root canal filling. He states that it has given much satisfaction.

397. **Uses for Thurlington.**—This is effective in sore mouth, pericementitis, sometimes following the filling of teeth.

How to use it.—Fold a piece of bibulous paper several times, saturate it with the remedy, full strength, and lay it on the gum as nearly over the apex of the root as possible,

keep it there twenty or thirty minutes. If the gums are spongy and bleed easily, apply it with a brush or mop, and wait a few minutes before rinsing the mouth. If there is general inflammation, dilute one part thurlington with three parts of water—of this take one teaspoonful and wash the mouth. If the throat is sore, gargle with it. The wash is excellent for soreness caused by plate—it is equally good for burns and bruises.—Dr. E. Parsons, in *Dental Office and Laboratory.*

398. **Aqueous Solution of Essential Oils.**—It has been found by Bergmann that while mixtures of the fixed alkali soaps with hydrocarbons and essential oils form only emulsions in water; under separation of the respective oils, a mixture of an ammonia soap with the essential oil will form a clear solution in water, especially in presence of an excess of ammonia (*Chem. Zeit*, November 6th). Turpentine oil, or some other essential oil, is first mixed with castor oil, or a mixture of it with some other fat oil; the mixture is then subjected to the action of concentrated acid, and the product, after being washed with a solution of salt, is saturated with ammonia in excess. Of the fat acids may be first separated by treatment of the fatty oil with concentrated acid, then washed with salt solution, and the essential oil added either before or after saturation with ammonia. The preparation thus obtained is said to form a clear solution, and not only to possess the properties of soap, but also to exercise, in aqueous solution, the solvent action of an essential oil.—*Pharm. Journ.*

399. **Sulpho-carbolic Acid.**—Laplace has found that a mixture of twenty-five per cent crude carbolic acid, with an equal quantity of concentrated crude sulfuric acid, gives a thick, syrupy, dark-brown mass which possesses great disinfectant power; inferior only to a five per cent carbolic solution or a one-thousandth acid solution of bichlorid of mercury. No equally cheap, attainable, and effective disinfectant is known.—*International.*

400. **Tannic Acid Styptic.**—A saturated solution in glycerin, is valuable as a styptic and astringent. I frequently saturate a pledget of cotton with it and compress hypertrophy of the gums, occurring frequently between the teeth caused by accumulations of tartar or proximal fillings extending beneath the gums. Instruct the patient to remove after twenty-four hours.—John G. Harper, *in Archives*.

401. **Prepared Chalk.**—This is used for polishing purposes and is the principal ingredient in tooth powder. I frequently prescribe in pyorrhea alveolaris equal parts of prepared chalk and flowers of sulfur. In cases where the calcic deposits are great, a prescription containing equal parts of prepared chalk, flowers of sulfur and pulverized soapstone, flavored with oil of wintergreen is prescribed. It is claimed that the soapstone prevents the formation of tartar, but I have not used it long enough to test this claim. —John G. Harper, *in Archives.*

402. **Flavor for Tooth Washes.**—A good flavor for almost any kind of a tooth or mouth wash, can be made of peppermint 30 parts, spearmint 15 parts, clove 5 parts.—Wm. H. Steele.

403. **Spray for Inflamed Mucous Membrane.**—

Sodii bicarb	ʒ viij.
Sodii bibor	ʒ viij.
Sodii benzoate,	
Sodii salicylate	āā gr. xx.
Eucalyptol,	
Thymol	āā gr. x.
Menthol	gr. v.
Ol. gaultheria	gtt. vj.
Glycerin	℥ viiiss.
Alcoholis	℥ ij.
Aque	q. s. 16 pints.

This formula gives a solution which is sufficiently alkaline to dissolve the thickened secretion adhering to the nasal mucous membrane, and as it is of the proper density, it is

bland and unirritating, leaving a pleasant feeling in the nose. At the same time it is antiseptic and acts as a deodorizer, being in this respect far superior to Dobell's solution or any other non-irritating deodorizer and antiseptic. As it is, however, inconvenient for many patients to have so large a quantity of solution on hand, one of our Philadelphia druggists made the solid ingredients in a compressed tablet, so that one, when dissolved in two ounces of water, will make a solution identical in its effects with the solution made after the above formula, and my patients prefer the tablets to the solution.—*From a Reprint.*

[This solution forms a most excellent mouth wash in stomatitis and ulitis from any cause.—Ed.]

404. **Cocain for Sensitive Palate.**—If a 4 per cent solution of cocain be painted on a sensitive palate there will be no trouble in taking an impression.—H. H. Buck.

405. **Ive's Gutta-percha Varnish.**—Make of virgin rubber 30 grains, in half an ounce of chloroform; gum damar and sandarac, each 20 grains, in half an ounce of chloroform; dissolve and make an ounce. It makes a very strong, solid, and somewhat opaque varnish. This is undoubtedly the best preparation in use for varnishing cavities preparatory to inserting gutta-percha fillings.—Author.

406. **Sodium Ethylate for Blunted Gums.**—A 2 per cent solution of sodium ethylate painted on the blunted gum septum every other day, will reduce its thickness in about eight days.—*Review.*

407. **Glycerole of Tannin for Gingivitis.**—In the hope that it may prove as useful to others as it has in my hands, I desire to state that for this troublesome affection I have employed with satisfactory results the glycerole of tannin, touching with it the affected gums twice daily.—T. M. U., in *Cosmos.*

408. **Resorcin for Pus Pockets.**—

Resorcin	gr. x.
Oil cinnamon	♏. v.
Alcohol	♏. lx.
Water	℥ij

Inject in pus pockets around roots of teeth:—*Review.*

409. **Tropacocain as a Local Anesthetic.**—As a local anesthetic I have employed tropacocain thirty-seven times, without using, however, more than one-half grain at a dose The preparation which I have used is the following:

Tropacocain hydrochlorate,	2 grs.
Distilled water, M.	gtt. I (50).

S.—gtt. x for one local anesthesia.

The injections are made as in the case of cocain. The root or tooth to be extracted, or region to be operated on is surrounded by a series of injections of one or two drops of the above liquid, till the ten drops have been used.

I have been able to extract roots, penetrate the alveolus, and remove a sequestrum without the least complaint on the part of the patient, the injection itself being painless. The local anesthesia produced is much more rapid than with cocain, and commences forty-five seconds to one minute after the beginning of the injection. The anesthesia lasts longer and appears more developed than with cocain. But one point on which we must insist; that is, that this injection be not made suddenly; at least one minute should be employed in injecting the dose. In this respect let me mention a method which I have used with success in several cases of cocain accidents, and that is, that as soon as toxic symptoms appear I introduce a lancet in the injected region, so that the flow of blood may wash out the part of the injected liquid which may not have yet passed in the blood current, and so reduce the chances of too severe poisoning.

1. Used in an equal dose sufficient to produce local anesthesia, the new drug is much less toxic than cocain, and has a very slight action on the vital functions of the economy.

2. It produces a local anesthesia more rapid and more pronounced than cocain, and of at least as great a duration.

3. The solution of the salt being an antiseptic, can be kept for several months without decomposition, while after a few days a cocain solution is worthless for injection.—Hugenschmidt, *Extract Cosmos.*

410. **Dr. Harlan's Tooth Paste.**—Below we give the formula for this preparation:

℞.—Crete precip.,
Pulv. orris rad.......āā ℥ ii.
Pulv. saponis Cast. alba....... ℥ ss.
Pulv. os. sepia....... ʒ ii.
Pulv. myrrhe....... ʒ i.
Pulv. sacch. alba.,
Pulv. boracis.......āā ℥ i.
Carmine....... grs. x.
Ol. gaultheria....... ʒ i.
Glycerin,
Honey.......āā ℥ i.
M. Ft. paste.

—*West. Dent. Jour.*

411. **Dental Uses of Thymol.**—In the *Deutsche Monatsschrift für Zahnheilkunde*, January and April issues for 1892, A. J. Hartmann calls attention to the value of thymol as a medicament in the treatment of acute pulpitis, claiming for it an antiseptic and germicidal action which is sufficient to arrest the inflammatory process resulting from microbic infection without exerting any escharotic effect on the pulp-tissue. He cites cases of pulpitis with exposure successfully treated by thymol in substance, and recommends it as decidedly superior to carbolic acid as a preliminary treatment to the capping operation, which he asserts may be successfully performed after a sufficient treatment with thymol.

A limited series of experiments made with this drug fully substantiate the claims which Hartmann makes for it. The application may be made either by applying a small crystal or a powder of the drug directly to the pulp, and sealing it in under a suitable temporary stopping. A saturated solution of thymol in chloroform may be used on cotton,

or the drug may be melted in a small capsule of metal or porcelain, and a pellet of cotton or small disk of blotting paper dipped in the fluid thymol and applied. The drug possesses the peculiar property of remaining fluid long after its temperature has fallen below its fusing-point, which gives ample time to apply it to the pulp-exposure before solidification takes place. In every instance so far as tried, relief of pain instantly follows the application. In deep-seated caries with great sensitiveness of dentine, where it is proposed to temporarily fill with gutta-percha, very satisfactory results have followed from touching the warmed and plastic gutta-percha to the surface of a thymol crystal, which slightly softens the surface of the gutta-percha by its solvent action, renders it adhesive as does chloroform or cajeput oil, and when inserted exerts an antiseptic and obtundent effect on the dentine. Its use in this way suggests the possibility of its value as a component part of the gutta-percha temporary-stopping material in the preliminary treatment of cavities with sensitive dentine.—Edward C. Kirk, in *Cosmos.*

412. **Sandarac Varnish.**—Put a quantity of gum sandarac in a bottle, and cover with alcohol ; use a wide mouth bottle. It should be shaken from time to time till all the shellac is dissolved. As there are, however, quite a quantity of little sticks, bark and other foreign matter in the globules of this gum, a little different manner of procedure, to make this varnish, will be indicated. The alcohol having been poured on the gum, it is shaken for two or three days (or more), till the gum is dissolved. The varnish thus made is now strained through some fine muslin to free it of foreign matter. Like shellac varnish, it may be made thicker or thinner by the addition of gum or alcohol ; and like it, also, it should be kept in a stock bottle, while that needed for constant use kept in a smaller wide-mouth bottle fitted with a good cork and brush.—Dr. Cheupin, in *Office and Laboratory.*

413. **Toothache Cotton.**—Melt white wax or spermacetti, two parts, and when melted add carbolic acid crys-

tals, one part, and chloral hydrate crystals, two parts, stir well till dissolved. While still liquid, immerse thin layers of carbolized absorbent cotton-wool, and allow them to dry; when required for use, a small piece may be snapped off and slightly warmed; when it can be inserted in the hollow tooth where it will solidify. The ease produced by this simple method is really very great.—*Medical Record.*

414. **Local Anesthetic for Small Operations.**—

Chloral hydrate,
Gum camphor..........................āā 2 drams.
Morphia sulphate........................ ½ dram.
Chloroform............................ 1 " M.

This may be painted with a camel's-hair brush over the area to be incised; allowed to dry and repeated as necessary to render the part insensible.—*Med. News.*

415. **Chloroform Water.**—This application, which is much employed in Paris, is prepared as follows: An excess of chloroform is poured in a bottle, three parts filled with distilled water, and, after repeated shaking, the mixture is allowed to stand till the excess of chloroform is deposited and the liquid quite clear. The transparent portion is then to be removed by a syphon, forming a saturated solution of ten grams of chloroform per liter. Applied on compresses, either in its pure state, or diluted with a half or whole weight of water, it is found to relieve superficial pains; but when these are more deeply situated, a very hot linseed meal poultice is first applied, which is afterward replaced by the compress of chloroform water. Active revulsion is thus produced which relieves the pain. Associated with a weak solution of opium it relieves vague dental pain.—*Medical Times and Gazette.*

416. **Test Capping for Exposed Pulp.**—

Boric acid,
White wax..............................āā 1 part.
Oil sweet almonds,
Paraffin................................āā 2 parts.

—H. Milling, in ITEMS.

417. **A Fine Tooth Wash.**—

White castile soap	ʒ ij.
Alcohol	℥ iij.
Honey	℥ j.

Perfume for above:

Asarum canadense,	
Orris root	āā ℥ j.
Strong alcohol	O j.
Make a tincture and add	
Tincture musk	ʒ j.
Essence of millefleurs	ʒ ss.
Essence of patchoulli	♏xx.

Dissolve the soap in alcohol, add honey and four ounces of the perfume.—*Exchange.*

418. **To Retain Dressing in Teeth.**—A piece of rubber tubing slipped over a tooth is good to keep in a dressing when the shape of the cavity is such that it is not retensive, especially when the tooth is isolated or standing alone.—Dr. D. V. Beacock, in *Dominion Dental.*

419. **Phenyl Acetic Acid.**—Internal antiseptic in ten-drop doses; dissolved 1 to 6 in alcohol in 1 oz. water. Used ocally to paint ulcers and patches in the mouth.—*Dental Review.*

420. **Eugenol.**—Acetamide is a new anesthetic, which will be unique in its class on account of its form of a dry, micro-crystalline powder; it is claimed that the application causes perfect anesthesis of the mucous membrane of the tongue, and the action is free from irritating by effects.—*Ohio Dental Journal.*

421. **Acid Cinnamic.**—C_6H_5, C, H, C, N, C, O, OH. Soluble in hot water, alcohol ether. Insoluble in cold water. Used as a spray in five per cent alcoholic solution, or in emulsion in a neutral oil.—*Dental Review.*

422. **Eulyptol.**—An antiseptic proposed by Dr. Schmelz, its composition being:

Carbolic acid	1 part.
Oil of eucalyptus	1 "
Salicylic acid	6 parts.

It is liquid, has an aromatic odor, dissolves readily in ether, alcohol, alkaline solutions; but in water to a very limited extent.—*Ohio Dental Journal.*

423. **Richardson on Local Anesthetics.**—He uses a mixture of 100 g. ether and 0.4 g. carbolic acid preferably to ether alone. Its action is more intense and of longer duration. He recommends as a spraying solution: Menthol, 1; chloroform, 10; and ether, 15. Neudorfer employs a solution of 0.59 cocain hydrochlorate in 50 g. of bitter almond water. The combination of cocain and cyanogen should be very effective. Steever uses cocain hydrochlorate, 1; antipyrin, 3; and water, 20.—*Corres. f. Schw. Aerzte and Ph. Central.*

424. **Formula for Dorsenia.**—This is about the only obtunding preparation the merits of which do not depend on cocain. It is said to be composed as follows:

Listerin and water	in quantity.
Carbolic acid	3 parts.
Camphor	2 "
Alcohol	3 "
Glycerin	2 "

—*Ex.*

425. **Lysol for Mouth Washes, etc.**—Half ounce of lysol in sixteen ounces of water may be still further diluted to use as a mouth wash. The writer takes of this stock solution, six drams to four ounces of water for washing scalers, excavators, forceps, etc.—*Dental Review.*

426. **To Toughen Wax.**—To toughen wax, stir in the melted wax a small quantity of Venice turpentine.—L. S. Keagle.

427. **Antifebrin for Periodontitis.**—Dr. Elliott says out of fifty cases he has been successful in reducing within a

few hours, forty-five cases of pain of advanced periodontitis, by two doses of ten grains each of antifebrin (acetanilide.)

428. **Temporary Filling Formula.**—For closing cavities temporarily the following preparation has been recommended: Best gum mastic 2 grams, chloroform 5 grains. Dissolve and add balsam Peru 2 grams.—*Ex.*

429. **Formula for Metal Base.**—It is said that to take silver 4 parts, and platina 1 part, will make a very good dental alloy for plates—that it works easily in swaging; does not tarnish in the mouth; can be soldered with 18k. gold solder, and that rubber can be attached the same as on a gold-plate. —Dr. Buck.

430. **Metal for Casting in Plaster Mold.**—Dr. Richmond says the following may be poured in a plaster impression without generating steam. Tin, 20; lead, 19; Cadmium, 13; Bismuth, 48, by weight. It melts at 150° F.

—*Ex.*

431. **Reid's Antiseptic Liquid Dentifrice.**

Thymol	2 grs.
Carbolic acid	2 drops.
Oil sassafras	8 "
Oil wintergreen	8 "
Oil rose geranium (Turk)	8 "
Oil eucalyptus	3 "
Glycerin	2 ozs.
Alcohol	4 ½ ozs.
White castile soap	2 drs.
Dist. water, q. s. to	16 ozs.
Calcium Phosphate	q. s.
Color,	
Caramel,	
Tinct, cudbear	āā q. s.

Dissolve the soap in 5 ozs. warm water. Dissolve the acid and oils in the alcohol and add to the soap solution. Filter through paper containing a small quantity of calcium phosphate. Add glycerin.

—*Pharmaceutical Era.*

432. **Parting Fluid for Impressions.**—Some one has said that equal parts of castor oil and coal oil, colored with

aniline red, make an excellent parting compound for plaster impressions.—*Odontographic Journal.*

433. **Use of Phytolacca.**—In April ITEMS was an article on phytolacca (poke root) that I want to add a word to. That is: It is the best remedy for quinsy extant; used in small doses, and stronger as a gargle. In fact, if used when the premonitory symptoms set in, it will abort the disease. According to Burt's "Materia Medica," it comes nearer to being a specific for diphtheria than any other drug.—P., in ITEMS.

434. **Hypodermic Solutions.**—Hypodermic solutions should be prepared with the utmost care, so as to exclude, as much as possible, all micro-organisms. If possible, the distilled water, vials, and everything coming in contact with them during the preparation, should previously be sterilized by a sufficient degree of heat. If this is not convenient the solution, prepared with distilled water, should be filtered through a small pellet of pure absorbent cotton, pushed in the neck of the funnel. These solutions should be prepared only in small quantities, as they are liable to deteriorate by keeping. Many of them may be preserved for a considerable time by the addition of 15 to 20 per cent of alcohol or glycerin, or by the addition of boric acid (about five grains to one fluidounce) or *by using chloroform water instead of plain distilled water for solution. The last named agent is particularly useful.* Preservatives should, however, not be added, except by direction, or with the knowledge of the prescriber. As soon as the slightest change is noticed in any hypodermic solution it should be rejected.—*Prescription.*

435. **Cavity Varnish.**—For closing cavities temporarily, the following preparation has been recommended:

Best gum mastic	2 grams.
Chloroform	5 "

Dissolve and add:

Balsam peru	2 grams.

After 12 to 15 hours the liquid is to be filled in bottles.—*Exchange.*

436. **New Preparation of Gutta-percha.**—In setting crowns of porcelain with platina pins extending in the roots, and for setting gold crowns and caps, I find a filling made of vermilion and gutta-percha of service.

This is made by mixing with heat and careful working one part of gutta-percha and three parts of vermilion. This combination resists the destructive action of the mouth much better than the usual combination of gutta-percha and oxid of zinc. For buccal cavities, where the ordinary gutta-percha filling softens on the surface, it is of value. A whole list of gutta-percha stoppings can be prepared without the use of oxid of zinc, which are interesting as experimental, and I shall hope at some future time to report on these. The combination of iron oxid with gutta-percha is one of these, and favorable results seem to have been obtained with this mixture, but it takes years to determine their relative value.—W. H. Rollins, in *International.*

437. **Celluloid Cement.**—One part shellac dissolved in one part spirits of camphor and three parts of 90 per cent alcohol. The cement should be applied warm, and the broken parts securely held together till the solvent has entirely evaporated.—*Scientific American.*

DEPARTMENT E.

DEPARTMENT E.

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438. **Forming Cavities in Porcelain Teeth.**—Every one who has occasion to place a filling in a porcelain tooth has experienced the unsatisfactory working of the diamond drill. The objections are, first, from the length of time consumed, as a diamond drill cannot be hurried; second, from the expense, owing to the frequent breaking of the drill; and third, the unsatisfactory edge produced.

The method I would advocate is as follows: To form a cavity in a central on the mesio-labial surface; first take an ordinary corundum wheel with round edge and of sufficient thickness to give the required length of cavity,—that is, from as near the cervix to the cutting edge as is desired. Now cut from the mesial surface directly in the tooth till you have the cavity deep enough to show the filling when in place, the desired amount on the labial surface. The labial aspect of the tooth will present the appearance seen in Fig. 1, with a well-formed edge; the lingual aspect the form shown in Fig. 2, giving a distinct shoulder at *a* and *b*. Now, with a copper disk, fairly thin, cut in at *a* and *b* in the directions of *c* and *d* respectively. In this way the filling may be held from falling out either upward, downward, or toward the labial surface. To prevent its moving backward, make undercuts, still using the copper disk, just anterior to *a* and *b* respectively. The undercut made anterior to *a* will be entirely on the mesial surface, and is represented at *f*, Fig. 3. It will be covered by the rubber when in place. That at *e* may be cut well in, finishing off the filling in the concavity on the lingual side just below the shoulder, which is beneath the pins. This method of

FIG. 1.

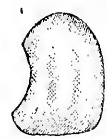
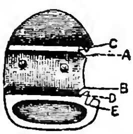


FIG. 2.

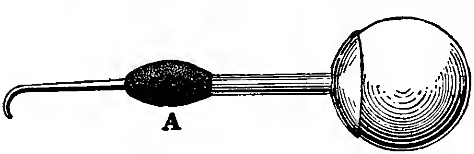


retaining the filling is essentially a system of dovetails. It is advisable to bend the pin, proximating the cavity, back out of danger of injury by the grinding. After forming the cavity, invest in plaster, for convenience in handling, and fill, Then take out of plaster and finish. A filling put in by this method will be firm in place and present a perfect edge, which latter it is quite impossible to obtain by means of the diamond drill. Of course the edge, posteriorly, will be irregular in outline, but that is covered by the rubber when the tooth is vulcanized in place.—H. A. Keely, D. M. D., *Internat'l Journal.*

FIG. 3.

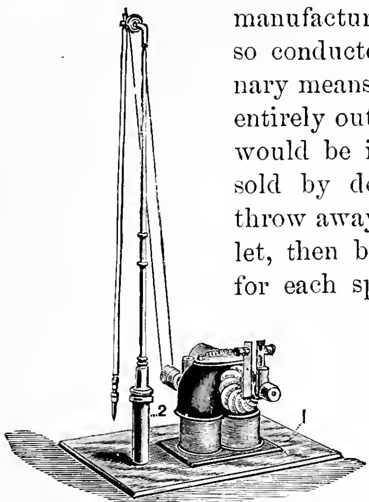
439. **Cast Aluminum Plates for Regulating.**—Dr. F. Abbott says: I have used cast aluminum plates to good advantage for these purposes. The plate is cast over the model and fits more accurately than most other plates. Then you can insert screws, if you choose, as the metal is not hard, yet strong enough to hold them. The plate can be firmly held in place by running the metal over the molar teeth as far as the necks, and driving it solidly down.—*The Ohio Journal.*

440. **Home-made Cavity Drier.**—Get an ordinary chip-blower, and hard solder a heavy piece of copper to it as shown in cut (A). The copper may be dressed out in two sections; nicely fitted to the tube; bound to place with binding wire, and well soldered. Thus for fifty to sixty cents you have a good cavity drier.—Wm. H. Steele.



441. **Cleaning Office Glassware.**—Wipe your office glassware with muriatic acid; it removes all water stains, and keeps the patient's nose in a normal condition.—E. W. S.

442. **An Economical Electric Motor.**—I believe the electric motor one of our most useful appliances in the dental office, and it would have been in almost universal use to-day, were it not for the fact that the manufacture and sale of them has been so conducted that practitioners of ordinary means thought them a luxury and entirely out of their reach; and so they would be if bought as advertised and sold by dental depots generally, *viz.*, throw away your engine and engine mallet, then buy a complete electric plant for each special purpose, at a total expense of from $125 to $225.



B

One motor, if a good make, will answer all purposes, and can be made to run the engine, engine mallet, fan, laboratory lathe, and a dynamo for electro crown- and bridge-work, or gold and silver plating if desired. The base of the motor will not be heavy enough for this purpose as it comes from the maker; it will be necessary to have a hard wood base made like 1 (see cut B); to this have a strong piece of hard wood turned upright (2) fitted, of proper height and size, so that your engine standard will fit firmly on to it. By this means you will not need to throw away the engine, and can instantly change from wheel to motor. The battery (if local or storage) should be placed just inside the laboratory door, with wires running up through swivel hangers in the top of the casing. When needed in the laboratory, slip off the standard, carry the motor in and place it on the bench or floor; with four screw-eyes, through the corners of 1, fasten it down firmly, put on the belt and go to work. A fan can be put up in front of the operating chair and run with the motor at the same time in conjunction with the engine, by having two grooves on the pulley. The current for running the

motor can be taken from electric light wires, furnished by a storage battery, or (where there is no electric light plant) by a self-generating battery. A motor, suitable for this purpose, can be got for $18 to $22, and if in a city where there is no electric power, it can be run with a local battery of four to six cells, costing from $2.50 to $3 per cell, or with a storage battery. Buy only of some reliable dealer; always specify what kind of current the motor is to be run by, as it has to be wound to suit the current it is to be driven with. A much nicer and cheaper way to get a motor is to put it up yourself, and any one who is capable of doing a nice piece of crown- or bridge-work will have no trouble to accomplish the work in a satisfactory manner. The *Scientific American* publishes a little pamphlet that furnishes all instructions, and teaches the principles on which the motor works. There are several electric houses that supply at a cost of from $3 to $6 the iron work for the armature, frame, the wire and all other material used in constructing the motor.—Wm. H. Steele, in *O. Dental Journal.*

443. **Cushions for Tired Heels.**—For tired heels Dr. Spence has found great help from the simple operation of placing inside the shoe, and below the wearer's heel, a cushion formed of soft and thin leather, made into a pocket and stuffed with hair. The natural springiness of hair prevents this pad from ever flattening down very hard, and thus avoids the occlusion of the ball of the heel with those prominences of the leather often found in this location. By means of this, the irritating discomfort of tired heels can be largely banished from the dental profession.—ITEMS.

444. **Refining Gold.**—The scraps must be spread on paper or glass, and a strong magnet passed over and among them repeatedly, to take out as much iron and steel as possible before putting in the crucible. This is a very simple method, and it will often save one or two remeltings, if attended to before commencing operations. Or the filings may be placed in a tall bottle, covered with a solution of one

part of sulfuric acid to eight of water, shaken up and allowed to stand for some time. The acid will dissolve out the iron, steel, tin, copper and zinc filings, leaving the noble metal untouched. When all is dissolved, throw away the solution and wash the filings several times with pure water. Then dry and heat them as before described. It is best to waste the solutions and wash the filings through filter paper, in order to avoid the loss of very fine particles of gold floating in the liquids.

By thus remelting scrap separately, the refiner can come reasonably near to a homogeneous alloy to start with, and he can then raise or reduce the quality, or color it much more easily and certainly, than if attempting to mix scrap, filings and new gold at one operation.

Plumbago crucibles should be used, as they are far the best for melting metals requiring a high degree of heat, and with care they will stand from twenty to fifty heatings. If using a new crucible, a little powdered charcoal should be put in it along with the metal. This will coat the surface of the plumbago, and prevent the melted metal from sticking to it.

The pouring of the gold in the ingot mold requires some dexterity and practice. It must not be done so slowly as to allow the stream of metal to run down the sides of the crucible; neither should the stream be so small as to chill the metal before entering the mold, or imperfect castings will result, and give trouble in rolling the ingot. On the other hand, the stream should not be allowed to strike with force enough to slop over the mold, making rough and uneven castings. The flux floating on the surface of the metal should be prevented from passing in the mold with the metal by using a thin piece of dry flat wood, held with the left hand at the lip of the crucible while pouring. Poplar is the best, as it burns very slowly. The warming and greasing of the ingot mold should also be attended to carefully. If it is too cold or too hot the metal will spit and fly about on being turned in it. It should be so hot as just to allow touching with the hand for a second or two. If these details

are carefully attended to, smooth, tough and malleable castings are pretty sure to result.

In melting scrap gold filings, etc., care should be taken to see that it is quite clean, and free from organic matter, etc. It is a good plan to heat the scrap in an iron ladle, till all wax, grease, etc., are removed, before placing in the crucible for melting. Always melt old gold by itself, using sal amoniac and charcoal in equal quantities as a flux. When the ingot has been cast and cooled, test its malleability by rolling or hammering. If it should split when rolling it is due to the presence of some foreign metal, such as lead, tin, iron, or steel. If the latter, the ingot should be broken up and remelted with two parts of carbonate of potash and one part of nitrate of potash. The flux will combine with the iron or steel, leaving the gold free. Then cast and try the ingot as before. If the impurity be lead or tin, the metal will be very brittle, and when broken the grains will be close and pale. A very small quantity of lead or tin will render gold too brittle to work. It must then be remelted as before, using as a flux two parts of charcoal to one of corrosive sublimate, breaking the gold in small fragments, and mixing thoroughly with plenty of flux while melting. In this remelting so often, serious loss in weight occurs, due to the elimination of the foreign metals; for this reason old gold should be melted and refined separately before using it to make alloy, or otherwise the refiner will be seriously out in his calculations, and the resulting alloy will not be of the grade desired.—*Dental Practitioner and Advertiser.*

445. **Tempering Mandrels.**—Dr. Wedelstadt, of St. Paul, Minn., says that if screw-headed mandrels are tempered to a straw color they will outwear a hundred untempered ones. Both screw and mandrel should receive the same temper. We all know how soon the thread of the ordinary mandrel screw is worn out.—*Ex.*

446. **To Reduce Heat of Spirit Lamp.**—For reducing the heat of the flame of a spirit lamp introduce a piece of

platina wire through the wick, so that it will not melt the edges of gold foil when placed in the flame.—G. Brunson, in *O. Journal.*

447. **A Convenient Foil Carrier.**—Take a large sewing needle, and with a corundum wheel grind at the head till the eye is reached; thus a fork will be formed out of the eye. Draw the temper and curve the forked end somewhat; with riveting hammer flatten the point. Fill a cone-socket handle with pulverized shellac; heat the socket and insert the point of the mutilated needle; center carefully; with the pencil of the shellac substance add a little more to make the joint perfect, and the instrument is ready to catch gold.—Dr. F. E. Battershell, in *Ohio Dental Journal.*

448. **To Flexoize Files.**—To flexoize a Froid file, immerse it in any heavy oil, burning off the same in a Bunsen flame as one would in tempering light steel springs. Pumice applied by means of a brush restores the color.—*Odont. Journal*

449. **Making a Cotton-Brush.**—I have a little device which I call the cotton-brush. It is simply made from an ordinary penholder and has a wire aluminum screw. I have found it very serviceable in cases where the gums have been very much congested and extremely tender, and in such cases children particularly dislike very much to have their gums brushed with a bristle-brush. These cotton-brushes, which simply consist of twisting a piece of cotton around the screw, clean the teeth very nicely indeed. Of course, the cotton is thrown away after it is used.

I have used these brushes for about eighteen months, and have found they worked very well. Take a piece of cotton and twist the screw, and it winds it on tight, and gives a simple method of carrying an astringent or anything else you want in the mouth. In every case where I treat pyorrhea alveolaris, I give the patient one of these, and tell him to dip it in listerin, or whatever else I recommend, and rub the gums well.—J. B. Littig, *International Journal.*

450. **Conductivity of Filling Materials.**—There exists a very simple method for comparing the heat conducting power of metallic bodies: The metals to be compared are shaped in wires of equal length and diameter and coated with a thin cover of stearin. When heated at one end by an alcohol flame the melting stearin drop will travel toward the cool end if the wire is held in an inclined position. The quicker the drop travels the greater is the conducting property of the wire, and in this way it is easy to demonstrate this quality of filling materials.—Hans Block, in *Dental Tribune.*

451. **Blow-pipe Flames.**—Thomas Fletcher, the well-known expert in practical metallurgy, gives the following directions for the use of the blow-pipe:

The flames may be separated in two classes. Those used for blow-pipe analysis are produced by air jets of small bore, and as smooth as possible inside; the theoretically perfect jet is made of glass tube drawn out small, and broken off where the required bore exists. The advantage of this jet is the perfect smoothness of the bore, which enables the operator to produce perfectly defined flames, with the reducing and oxidizing zones large and clearly defined. The disadvantage of the glass jet is its delicacy and constant liability to injury. Next to this comes the platinum tip, which remains fairly smooth inside; and last of all comes the simple and cheap brass nozzle so universally used. The flame in this class of blow-pipe is produced by an air pressure low enough to prevent the breaking up of the blue cone, the tip of which is the hottest part; inside this blue cone is the reducing flame; beyond it is the oxidizing zone. For brazing and soldering, a heavier air pressure and a larger bore jet is required; the blue cone is broken up, and the different zones of flame are much less clearly defined, and in practice are much less important. The flame is still roughly divided in a blue, or greenish-blue center, and an outer yellowish mantle, surrounding and projecting beyond the blue. The rough point of the latter is, as before, the hottest part, and

this should touch the work to be brazed. It has a distinctly oxidizing action; but this is overcome in practice by the protection of the flux used, which must have the power of dissolving oxids.—*The Dental Practitioner and Advertiser.*

452. **Soldering Tubes to Regulating Appliances.**—Dr. W. H. Gage recommends that before soldering tubes to regulators or other appliances, they should be filled with a few fibers of asbestos to prevent the solder entering them and choking them up.—*The Dental Practitioner and Advertiser.*

453. **A New Fusible Alloy.**—*Nature* gives the formula of a new alloy which is specially adapted to many important uses in the art. It melts at the low temperature of 160° F., the temperature of moderately hot water, and considerably below that at which the magic spoons of long ago melted in a cup of tea. Its composition is: Bismuth, 48; cadmium, 13; lead, 19; tin, 20. This new alloy will withstand quite a severe pressure. This makes a useful alloy for crown patterns, when making electro crowns, and filling metal tubing that is to be bent and shaped.—Wm. H. Steele.

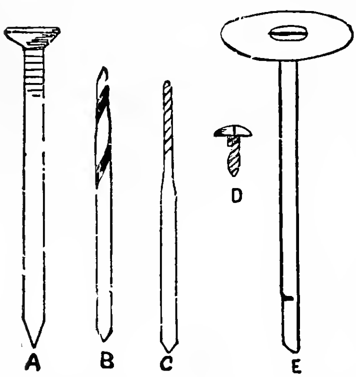
454. **New Tempering Bath.**—Take a suitable quantity of muriatic acid; dissolve all the zinc the acid will take. Prepare a tempering bath composed of one part of the above zinc acid and one part water. Heat the steel according to its hardness. If high or hard steel, heat till just red, and then temper in the acid bath. If low steel, heat it as hot as you would to temper in water, then temper in an acid bath. After immersing in the acid bath, cool off in water. For lathe and planer tools draw no temper; but for other tools draw temper. Unlike water tempering, the colors that appear under this method give no clue to the hardness.

By this process, steel is readily hardened to any desired degree, and may be made to cut glass like a diamond. If desired, an acid bath composed of two parts of muriatic acid and one part water may be used. Mr. Peck, however, prefers the zinc acid as being more dense.

A prominent advantage of this method of tempering is the certainty of its results. It never fails to yield the temper required. It can be relied on for every description of steel or tool.—*Scientific American.*

455. **Dentists' Leg.**—A pecular sensation of numbness, or "pins and needles" in the extremities is frequently experienced by dentists. This condition Dr. George Johnson considers to be due to the combined influence of perverted nerve-function, directly due to a mechanical impediment to the circulation through the rigidly-contracted muscles and their associated nerves, and to direct compression of the nerves by the firmly-contracted muscles. This combination is found in dentists who stand fixed and firm in one position for long periods of time. The obvious means of prevention and of cure consist in rest for the overstrained limb or such a frequent change of position as is equivalent to a certain amount of rest.—*The Lancet.*

456. **Home-made Disk Mandrel.**—



A.—Common wrought finishing nail, 12 or 15 cents per lb.

B.—Morse drill.

C.—Ordinary tap.

D.—Blue head screw, 25 or 30 cents per doz.

E.—Mandrel complete.

E. C. Moore, D.D.S., in *Archives.*

457. **Recut your old Burs.**—Attach a hard-rubber disk to a dental engine, by a bit having a tightening screw, such as is generally used for mounting celluloid disks.

The bur to be recut should be placed in a stock or hand-vise to hold it firmly. Proceed to recut, as follows: Drive the engine at moderate speed, passing the revolving disk

from end to end of each cut in the bur, being careful to omit none; examine the bur under an ordinary magnifying glass, and correct any imperfect edges, till certain that all are well cut.

The disk should be used dry, and removed out of contact with the bur after a second or two, in order to avoid heating by friction, which would spoil both bur and disk. Of course the disk can be reapplied as often as necessary to complete the work.

Any ordinary excavating bur may be recut in this manner in a few minutes, five or ten, after a little practice, so as to be equal to the higher priced stone-cut burs. Besides, the saving in utilizing old burs hitherto thrown aside, is a profitable item.

When a disk becomes round-edged and unfit for this purpose, the edge may be sharpened and rebeveled quickly, by revolving it rapidly against a wet, coarse corundum wheel, being careful to move the disk about over the surface of the corundum to avoid cutting grooves in the latter. These disks retail at twenty-five cents, and one will recut a gross of old burs. Try it.—*O. Dental Journal.*

458. **Hint on the Oil Can.**—One of the essential requisites of a well regulated dental office or laboratory is an oil can, but one of the most objectional features in its use is the certainty of soiling the hands from the accumulation of oil and dust on the outside of the bowl. Dr. Mathews obviates this by making a cup of tin or brass, half an inch in diameter, and soldering it about midway of the length of the nozzle; this, filled with spunk or absorbent cotton, serves as a receptacle for the oil which usually trickles down the nozzle and in time spreads over the surface of the bowl. An occasional renewal of the absorbent material is all that is necessary to keep your oil can in a condition to be handled without profanity. Try it, and our word for it, you will be delighted.—Dr. Mathews, in *Cosmos.*

459. **Syringe Needles—to Clean.**—Hypodermic or other syringes, when clogged so that a fine wire cannot be

forced through them, may be cleaned by holding over a spirit flame for a moment, and the foreign matter will be quickly expelled or destroyed, so that liquids may be used immediately. When a wire has rusted in a needle, dip the point in oil, then hold it over a flame, and it can be removed. It is well to draw oil through the point, then heat it, and rust will be removed from the interior; afterwards wash with alcohol, and it is ready for use.—*Dental Review.*

460. **To Make Articulating Paper.**—Of course this is a cheap article and will hardly pay one to make it for the money saved; but occasionally we get caught when it is needed, and we have not the time to order. For black paper, use finest-lamp black mixed with refined unsalted lard, to which has been added (for flavoring) a few drops of oil of gaultheria. This colored paste is to be thoroughly rubbed in the paper with a piece of white flannel. After enough color has been absorbed, take a piece of clean white flannel and rub till all color ceases to come off. "Copying tissue" makes a nice paper for the purpose. If medium tough paper is treated as above, it is very useful for making duplicate copies of orders, letters, etc. The sheets of colored paper being placed between sheets of fine linen writing paper, and written on with a hard lead pencil, gives two or three copies at one writing.—William H. Steele, in ITEMS OF INTEREST.

461. **Articulating Paste.**—This can be made by using the same colors as in making the paper; the colors being rubbed up with lanolin instead of lard.—William H. Steele, in ITEMS OF INTEREST.

462. **To Improve Wood Polishing Points.**—Wood polishing points, specially the large wheel-shaped ones, will wear without crumbling if, before using for the first time, they are soaked for several hours in a weak solution of shellac in alcohol, and subsequently given time to get quite dry; say about half a day.—C. D. Cheney, in *Cosmos.*

463. **Dentists' Hands.**—There are some men in the profession who do not realize the importance of properly caring for their hands. A man who operates at the chair should keep his hands clean, soft and white, and his finger nails properly trimmed and cleaned; for if there is anything that will disgust a refined lady, and cause her to change her dentist, untidy hands and slovenly attire will do it. There are undoubtedly many in the profession who would feel insulted, if told that their hands were unfit to go in a patient's mouth; but how can one expect to have *clean* hands and carry a stump of a cigar between their fingers, the greater part of their leisure time. Such fingers are *pickled clear through* with tobacco, and are disgusting to one who dislikes the weed.—Etta M. Steele.

464. **Handy Soldering Pliers.**—You take the ordinary pincers and hold a piece of gold over a Bunsen burner, and, unless you are very quick, your fingers will get very hot and you must drop it. I had a pair of pincers made with each of the points set in a little box of asbestos. I find it very valuable and satisfactory. You can leave it in the burner as long as you please, and the heat will not affect it; it is a good thing in the office and in the laboratory.—Dr. George Evans, in *International.*

465. **To Protect Instruments from Rust.**—All kinds of dental or surgical instruments, that are only used occasionally, or that are to be laid aside for a time, can be effectually protected from rust by coating them with the following:

Best quality of cosmoline, ½ lb.; best yellow wax, 2 ozs.; melted together over a slow fire, and thoroughly mixed. Wipe the instrument well with chamois skin, and apply a coat of the above with a piece of flannel.—William H. Steele.

466. **Acid on the Clothes.**—In working with acids in the laboratory, it sometimes accidentally gets spattered on our clothing. To meet these emergencies, have handy a bottle of spirits of ammonia, and immediately saturate the places

with it; this will stop all action of the acid.—William H. Steele, in ITEMS.

467. **Burnt Fingers.**—In handling hot flasks, furnaces, etc., we generally get burnt fingers. Petroleum jelly (Cheesbrough plain vaselin) applied immediately, will stop pain and cure the burn; bind a piece of linen on, and keep it saturated with the jelly till all soreness disappears.—William H. Steele, in ITEMS.

468. **To Remove Iodoform Odor from Hands.**—For the removal of the iodoform odor from the hands and utensils, Bienert recommends washing once with linseed oil and water. The odor is said to disappear with surprising quickness.—*Pharm. Centralhalle.*—*Druggists' Bulletin.*

469. **Aluminum Wire.**—This wire is valuable in strengthening rubber plates—as a carrier for any corrosive agent, making canal points, and many other places where a non-corrosive wire is needed.—*Ex.*

470. **Refining Waste Amalgam.**—The question of the easiest and best method of refining amalgam scraps, either those which have been mixed up and not used, or old fillings, so that they can be again utilized, is of interest to every practicing dentist.

It is well known that mercury boils at 357° C. and can be driven off from amalgam by a sufficiently high heat. The other metals present are not very easily volatile, and, if they can be prevented from oxidizing, should be left in a condition to again form an amalgam on the addition of mercury. I have made some experiments in this line, and find that this result can be obtained in the following manner:

The mercury may be allowed to escape, or the process can be conducted so as to preserve it. In the former case the operation should be carried on where there is a good draft to remove the vapors of mercury, so as to escape the danger from breathing them. It is only necessary to

heat the scraps in a crucible till the mercury is expelled, using a flux to prevent the oxidation of the alloy. A sand crucible may be employed and a coal-fire, or any heat by which it can be raised to redness. As a flux, borax glass—borax which has been fused to drive off the water of crystallization—answers very well. The amalgam should be placed in the hot crucible in small portions, so that it may not be thrown out by the sudden conversion of the mercury in vapor. Enough borax should be used to form a ring when melted around the button of alloy, and the heat must be maintained till the mass has come to a quiet fusion and the globules of mercury at first seen on the walls of the crucible have disappeared. The metal can then be poured out and the ingot reduced to the necessary fineness by any of the common methods. As a convenient means of doing this I have been accustomed to pour the mass in an unglazed porcelain mortar, which has been heated so that it can hardly be held in the hand, and grinding quickly with a warm pestle. By a little practice the metal can be, by this means, reduced to a fine state. The coarser particles may be sifted out by a fine wire gauze and remelted. As some of the borax will probably remain mixed with the alloy, it is advisable to boil it a few minutes in water that this may be removed if present. After drying it is ready for use.

If the mercury is to be recovered, the scraps must be heated in a mercury retort or a crucible with a bent tube inserted through the cover. The mercury will distil over, through this, and can be condensed where there is no possibility of breathing the vapor. When as much as possible has been removed in this way the heating should be continued a short time with the crucible open, in order to expel the last traces. The residue can then be treated as described above.—E. W. Rockwood, in *International Journal.*

471. **Clarifying Wax.**—Collect in a basin all your old wax and add a pint of water containing half an ounce of oxalic acid crystals. Boil slowly for half an hour and set

aside to cool, giving it plenty of time. Scrape off the refuse wax underneath the cake, and if the light color from the effects of the oxalic acid is not desirable, melt it in a pan without water, and stir in thoroughly a sufficient quantity of liquid butter color or some other pigment.—C. W. Berry.

472. **Use of the Storage Battery.**—The use of the storage battery in furnishing power for small motors and light for examining of nasal, oral and pharyngeal cavities, and the teeth; in furnishing abundance of heat in desensitizing dentine; in drying and sterilizing a root-canal; in removing painlessly and without hemorrhage epulic and polypoid growths; in cauterizing indolent, ulcerated mucous tissue, makes a storage battery, be it only a small one, an invaluable adjunct to the operating-room.—C. T. Gramm, in *O. Dental Journal.*

473. **Melting Points of Metals.**—

Metals.		Centigrade.		Fahrenheit.
Aluminum	degrees	700	degrees	1,292
Antimony	"	425	"	797
Arsenic	"	185	"	365
Bismuth	"	264	"	507·2
Cadmium	"	320	"	608
Cobalt	"	1,200	"	2,192
Copper	"	1,091	"	1,995·8
Gold	"	1,381	"	2,485·8
Indium	"	176	"	348·8
Iron, wrought	"	1,530	"	2,786
Iron, cast	"	1,200	"	2,192
Iron, steel	"	1,400	"	2,552
Lead	"	334	"	617
Magnesium	"	235	"	455
Mercury	"	—40	"	—40
Nickel	"	1,600	"	2,912
Potassium	"	62	"	143·6
Platinum	"	2,600	"	4,712
Silver	"	1,040	"	1,904
Sodium	"	96	"	172·8
Tin	"	235	"	455
Zinc	"	412	"	773·6

—*Ex.*

474. **Laboratory Pads and Holders.**—Pads and holders that are non-conducting and will not scorch, are very convenient when soldering, baking, etc. These can be easily made by any dentist at a cost of a few cents each. Procure at the plumbers, some asbestos paper, such as is used for covering hot-air pipes; get some of each, the thinnest and thickest grades, use the thin for making holders and thick for bench pads, the latter to protect the bench from hot flasks, soldering, etc. Cut the paper in sizes and shapes desired; now lay these pieces on some heavy flannel; cut out the pieces of flannel one inch larger on all sides than the asbestos; turn the edges up over the paper and stitch fast. In using these always have the asbestos side of the holder or pad next to the hot surface.—William H. Steele, in ITEMS OF INTEREST.

475. **Flexible Wrench for Band Matrice.**—Dr. Fernandez, of Chicago, has a neat little wrench for use with the Brophy band matrix. It is constructed with a flexible shaft and can be used at any angle. The shank of a watch key is soldered to a short piece of steel coil spring, and the opposite end of the spring to a straight shaft of any desired length. It can be made in a few minutes and is very useful.—*International Journal.*

476. **To Mount Corundum Disks.**—Take a blank mandrel for the dental engine, and with a file roughen the surface; or take one such as are sold at the depots, having a gimlet-point; warm the end, so that when dipped in powdered shellac, enough will adhere to it to thoroughly coat the surface when held in the flame of a spirit lamp. Place the end in the hole in the center of the disk, and allow it to set. Insert the mandrel in a handpiece and warm it sufficiently to soften the shellac; then revolve the disk by the engine, and true up the wheel with the finger as it runs, keeping the disk in motion till the shellac is cool.—S. T., in *Cosmos.*

477. **Cutting Soft Rubber.**—It is quite difficult to cut soft, or unvulcanized rubber, as it will stick to the shears.

To overcome this trouble, dip the shears, or knife in water occasionally. This is equally useful in trimming or sharpening bands or other appliances of soft rubber.—William H. Steele, in *Tribune*.

478. **Soapstone for Rubber-dam.**—Manufacturers of rubber-dam cover the surface with powdered soapstone, and if dentists will do the same after washing and drying, they will find it (the dam) will slip over the teeth "as if it had been greased," and not feel so bad in contact with the face. I keep an individual-pepper filled ready for use.—Abiel Bowen, Medina, N. Y.

A

B

C

479. **A Left-hand Screw Plate from a Right-hand Tap.**—Take a piece of steel wire and cut on it a right-hand thread. File off the threads on each side, leaving exactly opposite to each other two narrow rows of threads. A is a cross section of the filed tap. B is a perspective showing the tap and its unfiled right-hand threads. After hardening and tempering the tap, drill through a piece of steel-plate two holes equal in diameter to the reduced diameter of the tap. Insert the tap with a steady, constant push; to overcome the regular right-hand lead, turn it *to the left*. The result will be a complete left-hand screw-plate. C shows the left-hand screw. With the same tap placed in the other hole, cut a right-hand screw, and harden and temper the plate. Then use the plate to make two right and left taps of the common kind, so that wire-threaded in either hole of the plate will fit a corresponding nut threaded by the right or left-hand tap.

Dental regulating and other fixtures or appliances not infrequently require left as well as right-hand screws, and those can easily be made by the method described. The cut shows clearly the threads of the screw.—J. H. Beebee, in *Dental Cosmos*.

480. **Polishing Instrument Points.**—Put in the polishing cylinder (described below) the excavator points, burs, or other instrument, and put in with them about two teaspoonsful of the finest flour of emery; close the cylinder; screw it to the lathe, and run at a good speed till all rust and spots are removed; take off the cover and examine frequently; when clean, remove from the cylinder, pour out the emery and wipe out. Put in one teaspoonful of crocus, two of clean sawdust, a little olive oil, and the points; put on the cover and run the lathe till polished to suit; remove from cylinder, and wipe off with chamois skin.

The excavator points should now be sharpened on an Arkansas stone. The engine burs can be nicely sharpened as good as new; either with a knife-edged Arkansas stone by hand, or with a round knife-edged stone in engine.

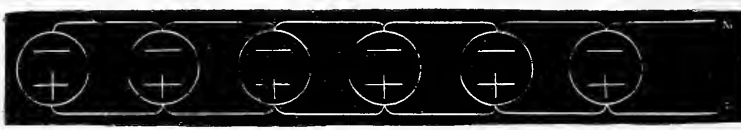
Polishing Cylinder.—To make the cylinder for this work: Take a piece of seamless brass tubing, one and a half inches in diameter, inside measurement, and three inches long. Close one end by fitting in a bottom of heavy brass. Now make a heavy brass nut that will screw on to the lathe head; then solder this nut to the center of the bottom piece, and place the bottom in the cylinder, solder fast with soft solder. Next make a tin or copper cover, make it to fit on tightly, so that it will not come off during use.—Wm. H. Steele, in ITEMS.

481. **Keeping Rubber-dam in Water.**—How to keep rubber-dam. A grand suggestion. Put it in a glass jar, and fill jar with water; then close the jar up air-tight, and let stand in a cool dark place for two weeks, and then open the jar and rinse the rubber in clean fresh water. Put the rubber back in the jar and fill with water, and keep as before. I have a sample of rubber that I have kept over five years in this way that is as *good as new.*—Dr. R. R. Rykert, in ITEMS.

482. **The Coupling of Battery Cells.**—The diagrams below illustrate different methods of coupling the cells of a battery according as it is desired to produce *power* (force intensity, potential), or for creating a *quantity* current. In

diagram No. 1 the cells are coupled in series from zinc to carbon—positive to negative. This method of coupling produces what is called a high-tension current, and is that which is employed for power and for illuminating purposes. In this arrangement each cell, whether large or small, gives a definite potential; and every additional cell gives increased

No. 1.
Battery-Cells Coupled in Series to produce Electro-motive Force or Power (potential).



No. 2.
Battery-Cells Coupled in Multiple Arc to produce a Quantity Current.

intensity to the current produced, the *number* of cells determining the intensity, without reference to their size or the depth of immersion of the electrodes in the electrolytic fluid. The number of cells necessary to be employed in a given case depends, therefore, on the amount of resistance to be overcome. The unit of measure of electrical force is expressed by the term volt (as the pressure of steam in a boiler is designated by pounds); the unit of the measure of resistance is an ohm; the unit of the measure of quantity is an ampére. In an ordinary bichromate-cell, such as the Grenet or a plunge battery in which a single fluid such as the electropoion is used, one cell gives a potential of a little over one and three-quarters volts; two such cells give twice that, and so on according to the number of cells,—six cells, when arranged as in diagram No. 1, producing ten and one-half volts. When a current of electricity passes through a conductor which resists its passage, it heats the conductor to a degree proportionate to the resistance which it meets. The thin filament of infusible carbon in the lamp forms a portion of

an electric circuit, and because of its low conducting power is heated to incandesence by the passage of the current. The small lamps employed for examination of the mouth offer a resistance of about five ohms, requiring proximately five volts to overcome it. Three cells of an ordinary bichromate or Bunsen battery produce a current of about five volts. The intensity of the current required depends on the size and character of the carbon filament. A current that would be necessary to produce incandescence in a three-candle-power lamp would destroy the filament in a one-candle-power lamp. To increase the intensity of the current by increasing the number of cells beyond the amount required to overcome the resistance sufficiently to produce incandesence is to risk the destruction of the carbon filament. In lamps of the same size and intended to be alike the resistance is not uniform, owing to a difference in the size or density, and the carbon may be destroyed in one by a current just sufficient to produce incandesence in another. It is therefore necessary to employ a resistance device to graduate the flow of the current. In diagram No. 2 the cells are coupled from zinc to zinc, carbon to carbon—positive to positive. By this arrangement quantity of current is produced, according to the number of electrodes and the amount of their exposure to the electrolytic fluid—the larger the electrodes and the deeper their immersion the greater the chemical action. But, while an increased exposure of the electrodes to the fluid increases the amount of electricity generated, it does not increase the electro-motive force. If the six carbons and six zincs, coupled as represented in diagram No. 2, were all placed in one cell instead of in six, the result would be the same. A quantity current is required for cautery purposes. To summarize, the potential or intensity of a current depends, first, on the method of coupling, and secondly, on the number of cells included in the series, irrespective of their size and of the depth of immersion of the electrodes; while the production of a quantity current requires a different coupling and depends on the amount of surface of the electrodes exposed to the fluid, irrespective of the number of cells.

It should be understood that when the battery is placed at a distance from the lamp, as in the cellar or a room at a considerable remove from the operating-room, the length of the connecting-cord necessary makes an increased resistance to be overcome, and in such case an additional cell will probably be required to produce the same effect as when the cells are placed near at hand.—J. W. W., in *Cosmos.*

483. **To Cleanse Dirty Hands.**—For cleaning hands, however dirty, first rub well in warm oil, then sprinkle with powdered borax, and wash off in the usual way.—*Old File.*

484. **To Make Exploring Needles.**—An almost invaluable thing I have found for making explorations and examinations around the mouth, is to take a package of Sharp's No. 4 needles, and by the aid of an alcohol lamp and a pair of pliers they can be bent in any conceivable shape, so as to reach all points around or between the teeth. (The reason I say Sharp's No. 4 needles is, because they appear to me to be the most convenient size.) If a suitable point has not been made previous to an examination that will reach the desired spot, it is only the work of a moment to construct one just the shape desired. The said points can be turned at any angle, and made so fine that they will penetrate almost the finest space and catch in the finest cavity, and by the use of a small file the large ends may be filed rough, so that they will fit and hold firmly in the ordinary nerve broach holder. The heating takes the temper out of the needles, rendering them quite tough. They are inexpensive, and you have any shape of exploring point desired. —Charles S. Hardy, in ITEMS.

485. **To Renew Zinc.**—When used in making dies, zinc gets too thick and loses life; it can be renewed by placing it in a melting ladle; melt it and keep the ladle over the heat till the metal shows a dark red, then add of strong hydrochloric acid—the metal to be stirred constantly while the acid is being put in.—Thomas Fletcher.

486. **Action of Acids on Cements.**—According to the statements of Dr. Brubaker, lactic acid dissolves cement fillings very rapidly, while acetic acid has little or no effect on them.—*Exchange.*

487. **Dorrence's Alloy.**—This alloy is made of silver, 1 part; zinc, 2 parts; and copper, 3 parts; (metals must be pure) and is used to alloy gold or silver plate for making solders. It makes a strong, easily flowing and tough solder that follows the color of the plate from which it is made. I prefer it to the solders that I have been able to buy, and can profitably use my plate scraps. If the dental depots would furnish this alloy they would do the profession a service.

Fragments of roots broken off in extracting, can often be easily removed by burring away the alveolar process immediately surrounding them, thereby avoiding much pain and laceration. It would be an advantage if the dental instrument-makers would make some burs with long shanks for this purpose.

It is sometimes advantageous to make a model of plaster and sand, and when the work is adjusted do not remove from the model, but add enough more plaster and sand to hold the parts in position, remove wax and solder.—*Ohio Journal.*

488. **Carat, Grains and Percentage.**—The word "carat" comes from the Abyssinian name of bean. It corresponds in weight with a species of East Indian bean, and was originally used only as a weight, in the same manner as our word "grain" comes from a grain of wheat, and has also its average weight. The exact relation of the carat to the grain, Troy weight, is, in round numbers, as 4.608 to 1.185; or, in other words, 1.185 carats are equal to 4.608 grains Troy. By division of the last number by the first, we find for the weight of the carat 3.88 grains very nearly. The carat is the weight by which jewelers sell diamonds. The carat is now only used for weighing precious stones and pearls, because the grain is too small.

In ancient times, it was used as the unit of weight for gold, but is now, on account of the greater abundance of that precious metal, superseded by the ounce. In regard to the alloy of gold, it has been accepted to take twenty-four carats of gold or ninety-three grains, very near, as the standard of pure gold, and to call gold in which twenty carats in twenty-four carats are pure gold, gold of twenty carats; when three-fourths is pure, or eighteen carats in twenty-four carats, it is called eighteen-carat gold. So in regard to the alloy of gold, the word carat has become similar to the expression of a percentage, with the difference that twenty-four is substituted for one hundred. So eighteen-carat gold is identical to seventy-five per cent fine; twelve-carat to fifty per cent fine, etc. That this manner of estimating the value is kept up is simply due to the custom of following the duodecimal system in making alloys, which naturally drives us to the expressions, seventy, eighty, or ninety per cent when speaking of the fineness of the most valuable metals.—*Exchange.*

489. **Soldering without Heat.**—This consists of two alloys; the one of metallic sodium and mercury, and the other of metallic copper and mercury, prepared and used as follows: The flux consists of one part of sodium to fifty parts of mercury. This must be carefully protected from the atmosphere in a glass-stoppered bottle. This has the property of amalgamating any metal with which it comes in contact, forming an adhesive amalgam even on cast iron. The solder proper is made as follows: Dissolve 10 ounces of sulphate of copper in 2 pints of water, and then precipitate the copper by the introduction of strips of zinc. Wash the precipitate in hot water two or three times, drain off, and for every ounce of precipitated copper add 2 ounces of mercury. Add also a little sulfuric acid (say 15 to 20 drops), to aid in the amalgamation of the metals. The finely divided copper and mercury forms a paste which sets and becomes intensely hard in the course of a few hours. It should be made up, while soft, in little pellets and put

away. When required for use, first amalgamate the surfaces to be joined by rubbing them lightly with the flux. This is the equivalent of tinning in the ordinary soldering methods. Then take one (or more, as the case may be) of the pellets, and warm till the mercury begins to exude at the surface. Wipe off the exuded drops with a clean rag, and drop the pellets in a small mortar and rub till smooth, or about the consistency of prepared white lead. Smear this over one of the surfaces to be joined, and apply the other surface to the latter as quickly as possible. The joints set so firmly in the course of two-and-a-half to three hours, that only a hammer and cold chisel (or a degree of heat sufficient to melt ordinary solder) can separate the surfaces.

For an even stronger and much quicker setting solder, where expense is no item, take the following to replace the copper and mercury (using the same flux):

Silver	8 parts.
Tin	10 "
Bismuth	1 part.
Platinum	1 "

Melt together, and cast an ingot. Rasp to filings, or otherwise reduce to small particles. When required for use, mix about 3 parts of filings and 1 of mercury in a small mortar till it becomes a smooth paste. This sets in about fifteen minutes, and can not be made workable again by heat; it must be mixed just as required. The omission of the platinum reduces the strength of the solder, and lengthens the time required to harden to about one hour. The omission of bismuth makes a more granular mass, which is better for filling up crevices. With bismuth, it is as smooth and plastic as potter's clay, Joints made by this solder are almost inseparable. It is very valuable in repairing surgical and philosophical instruments, the brazing of delicate springs, and in all cases where the application of heat would be hurtful or destructive.—*National Druggist.*

490. **Engine Foot Pad.**—A neat and cheap rubber foot pad for the engine, can be made from ordinary *heavy* rubber-

dam. Cut a piece of paper, to just fit the foot piece of the engine; lay this on the rubber and cut a piece like it, cement it to the foot piece with Le Page's glue. Such a pad will answer all purposes of one costing a dollar.—Wm. H. Steele.

491. **New Soldering Fluid.**—Chlorid of zinc, so much used in soldering, is, besides its corrosive qualities, unhealthy and disagreeable to use. A soldering mixture has been found which is free from these defects. It is made by mixing one pound of lactic acid with one pound of glycerin, and eight pounds of water.—*Off. and Lab.*

492. **A Fine Polishing Paste.**—Mix ten parts of tin putty, eight parts prepared buckshorn, and twenty-five of spirits of wine, to a paste. Cleanse the article with this, and polish with this and fine blotting paper.—*Off. and Lab.*

493. **Gutta-Percha Bowl.**—Dr. Geo. Evans forms a mass of gutta-percha in the shape of a small bowl, in which is dropped chloroform. The mixture is made immediately for any and all purposes it is to be used. By this method a thin or thick solution can be had at the same time.—*Catching's Compend.*

494. **To make Gold Non-Cohesive.**—Ammoniate your gold when you want it non-cohesive; by annealing, it becomes cohesive again. Heat will drive off any gaseous matters from the surface of gold.—*Review.*

495. **Bunsen Burner; Best Way to Use.**—The best way (according to Fletcher) to use a small Bunsen, is to have it mounted with the tube horizontally, or nearly so. In such a position it never gets choked with dirt, and can be turned down safely to the smallest point of flame without the use of the air slide, and without risk of lighting back. —ITEMS.

496. **Dirty Oil-Stones.**—Many otherwise clean operating tables contain one of these. Did you ever see a dentist

pick up the oil-stone and turn his back to the patient before opening the case? A little piece of cloth, wet in alcohol, and applied with plenty of elbow grease, will keep the stone as clean as new.—Wm. H. Steele, in ITEMS.

497. **To Spring Temper Broaches.**—To give a spring temper to broaches by dipping them in melted lead, keeping them there till as hot as the lead and instantly plunging them in hot water.—Dr. C. J. Tibbetts, in ITEMS.

498. **To Clean Obstructed Hypodermic Points.**—If the needle of your hypodermic syringe is obstructed, and you have no wire fine enough to enter the point, have recourse to a section of braided picture wire; one of the fine strands from this is just the thing needed.—Dr. W. S. Elliott, in ITEMS.

499. **Soldering Aluminum Without Flux.**—The solder is an alloy of aluminum and tin, suitable proportions bring 45 parts tin to 11 parts aluminum. The metals are melted separately, poured together, and then cast in slugs. No flux is required.—R. Heaton, in *Scientific American.*

500. **Materials Used in Artificial Teeth.**—The substance of an artificial tooth is made principally of spar and silex; the gum color, of the purple of Cassius and teroxid of gold; the bluish tint is platina; the yellowish tint, oxid of titanium.—ITEMS.

501. **Cosmetic for the Hands.**—For keeping the hands white and soft Meyer recommends the following, to be rubbed in after a thorough washing and drying: Lanolin 100 parts, paraffin 25, vanillin 0.1, oil of roses sufficient. It is most conveniently kept in collapsible tubes, and is especially suited to the needs of physicians, who must frequently disinfect their hands.—*Exchange.*

502. **To Barb Nerve Broaches.**—When reduced to the desired size the barbing is easily done by taking an enamel

chisel, very thin on the edge and very hard. Place the broach in a sliding tube-holder or chuck—same as for holding it securely while cutting down with the corundum wheels—and hold under it a piece of glass or any hard, bright surface. Hold the chisel at ninety degrees angle to the broach, commencing near the point, and with the blade of the chisel held on the broach, not directly at right angles with it, but with the right edge or corner of chisel turned farther away from it, so as to throw the barb up the right side of its length, in order to insure its catching the pulp. If cut directly across, at right angles, it will not do so nicely. A slight pressure on the chisel will raise a barb—be it ever so slight—that, if cut to the right will be sure to catch the pulp every time. Do not make more than three or four barbs, and close together at the point, and not so deep as to endanger its main strength. This can be very successfully done by a little practice.—Dr. Bonwill, extract from *International.*

503. **Reducing Nerve-Broaches.**—For reducing steel piano-wire, evenly tempered, use two corundum wheels kept together by a coiled spring (see cut), and afterwards use paper disks with the soft rubber on either side, for fine work.

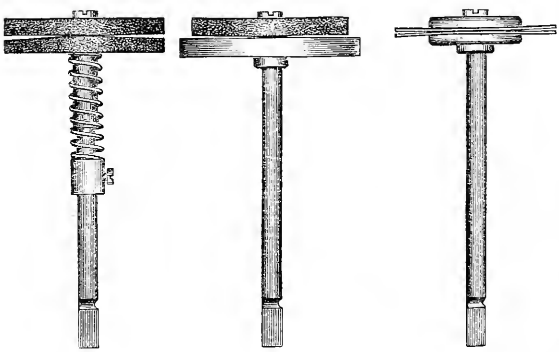


Fig. 1. Fig. 2. Fig. 3.

Bonwill's devices for making nerve-broaches from Stubs' tempered steel piano-wire, and for reducing Swiss broaches to an infinitesimal size.

DESCRIPTION OF APPARATUS.

No. 1 consists of two sharp-cutting corundum wheels, used dry, with one at a slight bevel, as shown in cut. The outer one is screwed fast to mandrel made for the purpose, and the inner one is shellaced to a thin sleeve, which moves lengthwise only on the mandrel, and is controlled by a coiled spring, the tension of which is regulated by the movable collar and screw on the mandrel nearest the chuck of engine, hand-piece or lathe. The collar holding the corundum wheel is prevented from turning on the shaft by a pin running through it, and on a flattened surface of mandrel. This is for heavy work of reducing tempered stub wire, but will do so to a very fine broach.

No. 2 is a shellac and corundum wheel and a soft rubber disk of plain packing rubber on the inside next to the hub on mandrel, and both secured tightly to keep from turning. The rubber disk should be of greater diameter to allow the broach to be guided in between them easily. The edges at the periphery will be slightly apart when screwed up tightly. Both revolve at the same time.

No. 3 is made of two one-inch shellaced corundum paper or cloth disks, coarse or fine,—better medium for the last, which is used for very delicate work,—and on both sides of these a half- or three-quarter inch soft rubber disk, cut from packing rubber and placed around; all screwed tightly on mandrel. There is no trouble in making them from the material every dentist has on hand, if it be only the paper disk.

In making No. 1 the bevel should be very slight and perfect, as the broach is so small. The inner wheel should have controlling it a very stiff spiral spring, nicely adjusted, to permit the broach to go down between the wheels. While the broach or wire is being cut, it should be revolved constantly to keep it perfectly round, and the point kept in towards the center of the wheels, in order to more perfectly point it. They are held by a small chuck hand-piece while being cut, and when in use are fastened to a very light handle. —Dr. Bonwill, extract from *International*.

504. **Sandpaper Holder for Hand Use.**—Take a quart-taper cork, trim up in cone shape on the lathe, make a slit through apical end of cone half-way down with a dental saw, insert in this a piece of sandpaper a little wider than the opening, bent back at one end for retention, and you have a hand sandpaper mandrel for use on rubber plates, which conforms with depressions and works admirably.—Dr. Barnes, in ITEMS.

505. **Mouth Lamp.**—Dr. W. H. Trueman exhibited a little device for the removal of crowns which were set in the roots with gutta-percha. It was merely a small vial with a slot in the cork, through which passed a piece of grocer's cotton cord, forming a wick. The cord was moistened with alcohol and set on fire. A minute blaze was the result, which was held for a few moments next the crown. The gutta-percha was thus quickly softened, more quickly and effectually than by the application of a heated instrument to the tooth, as is usually the plan adopted, and with no discomfort to the patient. The cut represents the appliance.—*Office and Laboratory.*

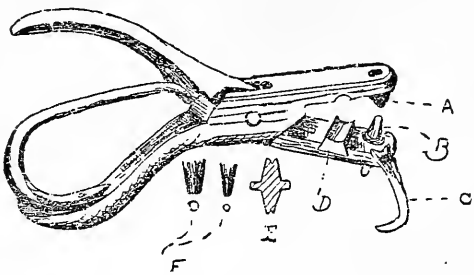
506. **Suggestions for Using Diamond Drills.**—When drilling a cavity with a diamond drill, oil only should be used as a lubricant, thus preventing the drill from becoming heated, which would cause it to tear out; also, when drilling a cavity, two drills should be used of different sizes, the larger one to widen the cavity, and the other for the retaining points. When properly used, these two drills should last till the steel which holds the diamonds is actually worn away.—A maker of them, in ITEMS.

507. **Rubber-dam Clamps.**—Rubber-dam clamps are among the most valuable instruments that a dentist uses; at the same time they are among the most dangerous.

Any one who has used them for a long series of years has had cases where decay came as the result of the injury inflicted on the enamel by the hard and sharp edges of the steel jaws of the clamp. I have seen many such results in delicate teeth, and have sought for some means to overcome this. In my own practice I employ clamps with adjustable jaws of soft metal or other substances like hard rubber and celluloid. These jaws are easily replaced if injured, and enamel would require to be very soft indeed to receive injury from such clamps. I have never seen a case that showed subsequent decay from the use of my clamps. I describe them here in order to prevent, if possible, some unscrupulous person from patenting the invention, which consists briefly in making clamps with removable jaws; said jaws instead of being made as at present of hard steel, are constructed of soft metals like tin or rubber or celluloid, or other suitable material; the object being to provide jaws too soft to injure the enamel of the tooth. These little removable jaws can be molded in quantity, and are therefore cheap, and at the same time they are readily bent to fit any special form of the tooth to which they are to be applied; this is a strong point in their favor. Besides this advantage they require but a few clamps to fit a whole set of teeth, for the jaws, being removable, suitable ones can be selected from a great number, and simply placed in the clamps for use. —William H. Rollins, in *International.*

508. **A Piano Wire Separator.**—Another appliance is a little instrument that will not slip, but hold the teeth firmly in getting space. It consists of a small piece of piano wire, with a thread cut on it. One end is flattened, and on the other end is a little nut. A small washer goes on the other side between the teeth. It is a matter of considerable convenience, and in some cases a very serviceable little separator. It is not applicable to cases where it is liable to slip against the gum. That may be modified by putting a little sandpaper washer under the nut.—Dr. H. W. Gillett, in *International.*

509. **How to Make a Useful Instrument.**—*Explanation of cut.*—A, celluloid or vulcanite anvil, for the punch to strike on. B, rubber cutter or punch. C, ligature cutter, partly open and in position for removing the punch. D, copper jaw of point pliers. E, shows middle section of rubber punch. F, points of punch and size of holes. G, reverse end of punch.



The little instrument shown in above cut, has been in constant use in my office for five years, and has proved so useful, that I give my method of making it for the benefit of your readers. Procure of some dealer an ordinary nickel-plated card punch, such as used by merchants for canceling sales on credit cards. With a steel punch drive out the cutter, fit in its place a piece of celluloid or vulcanite, having the top rounded, as shown in A. This makes the bed-piece for cutting the rubber on; the top is rounded for the purpose of stretching the rubber-dam, as the punch closes down on it.

Next, turn out of a piece of Stubs' best steel drill rod, the rubber-dam punch (E). The two small ends want to be of different size in order to punch the two different size holes; the center, or shoulder, should be large enough to give it a firm seat in the jaw of the instrument; center the small ends and drill in them deep enough to make the cone-shaped holes and cutting edges shown in the cut. Drill a hole in the lower jaw, directly opposite the vulcanite anvil, and entirely through, large enough to take in the largest end of the punch. With a square end drill (or better turn it out in the lathe) enlarge this hole deep enough so it will take in the shoulder of the punch, allowing the top of the shoulder to come flush with the face of the jaw.

To make the point plier combination, close the jaws of the punch and wind them together firmly with wire; center

a twist drill between them, and drill a hole through; remove the wire with a file, cut a dove-tail mortise and fit in a piece of copper (D). On the side where the ligature cutter shuts in, the copper should be filed down smooth with the face of the jaw sufficient to let the blade close in out of the way when not needed. The balance of the copper should be left high enough to allow the grasping of a cone-socket point without having the rubber punch strike. The next, and last step, is the ligature cutter. Make this from a piece of the very best steel and shape as shown in cut (C). The large end, or shank, should be made concave, with two pointed corners, and should be fastened to the jaw in such a position that one or the other of these corners shall act as a lock to hold the punch in place at all times, except when concave end of the blade is exactly in line with the oval shoulder of the punch (as shown in cut). When in this position the punch can be easily removed and reversed. Drill a small hole in the jaw and rivet the blade to place. Do not rivet the head so tight but that it can be opened and closed. This instrument can be made by any one at a cost of one dollar to one dollar and twenty-five cents, and will take the place of three instruments costing four dollars and fifty cents.—Wm. H. Steele, in *Ohio Dental Journal.*

510. **To Make Cells for Storage Batteries.**—Procure a glass bottle, cut a strip of one-sixteenth sheet lead, to fit nicely around the inside; score this all over on the inside. Now cut two pieces from the same gage lead, almost square, one having a central slit half-way down from above and the other half-way up from below. Score these also on both sides. Put them together, fastening them with a drop of solder, and also attach leaden lug. A similar leaden lug must be attached to the inner coating of the bottle. Now coat the scored lead with red lead and oil of vitrol paste; allow to dry in a warm place. When quite dry the cell can be filled with a mixture of water, 4 parts; oil of vitrol, 1 part by weight. If carefully put together, this all is ready to receive a charge at once.—*Jour. Brit. Asso.*

511. **Rubber-dam Holders.**—The small clamps sold by clothiers for holding neck scarfs to the shirt front, are convenient in holding folds of the dam out of the way of the operator.—Dr. H. R. Neeper, in *Archives.*

512. **Annealing Nerve Broaches.**—Anneal nerve broaches in a glass tube.—G. P. Terry, in *Ohio Dental Journal.*

513. **To Renew Cement Powder.**—The powder of "osteo-plastics" by standing, often becomes impaired by absorbing moisture. To remedy this it should be heated over a sand bath in a porcelain dish.—*Ohio Dental Journal.*

514. **Proportions of Mercury and Alloy.**—It is said on good authority that the quantity of mercury to use in amalgam fillings is thirty parts of mercury to one hundred parts of amalgam. The less tin in the alloy, the less mercury will be required.—ITEMS.

515. **Smudging of Gold.**—The common method of annealing gold mats, pellets, or cylinders, by holding them over or in the flame of an alcohol lamp or Bunsen gas burner, is a practice which, while ordinarily successful, is liable to occasion defects in the fillings.

The resulting imperfections are not always observable in flush-finished fillings, though some of these subsequently scale at marginal points on their surfaces; but elaborate building or contour work not infrequently meets with most disappointing disaster, due to the smudging of the gold by the incomplete combustion of the flame fuel. Clearly one of the most important preliminaries to a gold operation should be a careful scrutiny of the annealing flame, to be sure that there is not a trace of smoke; that the combustion is perfect. The wick of the alcohol lamp is usually too tight in its tube, and not loose enough in its assemblage of fibers to permit a free flow of the fluid fuel. Of course, the appearance of a single glow-point of a fiber-end of the wick is a certain sign

of smoke, and should at once be remedied. When a lower grade than 95 per cent alcohol is used, the residual fluid, after a few hours burning, becomes so watery as to lessen combustion, and cause the charring of the wick-end. The sight of a blackened wick-end leaves no doubt as to the probable character of the annealing, and the operative work done by the use of that lamp.

The illuminating gas of diverse cities differ in quality, and even in the same city varies from time to time in its heat and light-giving properties; therefore the ordinary Bunsen burner is liable to vary in its degree of combustion; but the habit of closely observing the flame and keeping it regulated to the blue point of complete combustion, will tend to the avoidance of the risk of smudging, the main thing being to be sure that the burner is a good one. It is well to keep at hand a piece of white porcelain—for instance, a small butter-plate—and by occasionally holding it for a minute or two over the flame, gain an assurance of the entire absence of smoke.

The mica method of annealing is preferable, as avoiding all risk of a smudge.—W. S. Howe, in *Ohio Dental Journal.*

516. **Treatment of Syphilis in the Mouth.**—As soon as the lesion has been sufficiently studied and observed, and we are sure that it is a syphilitic sore, we are justified in beginning the treatment, which consists especially in the internal administration of one of the salts of mercury.

Later on, on the decline of the secondary period, when the tertiary symptoms make their appearance, the internal administration of iodid of potassium comes in play, and it is really remarkable with what rapidity some of these gummatous tumors melt away when the potassium salt is given. In rare instances the iodid alone will not act, but in connection with small doses of mercury it is capable of working wonders.

Hence, whenever, after having removed all mechanical irritative points, we find that an ulcerative lesion of the buccal cavity does not disappear, we must administer from thirty

to sixty grains of iodid of potassium in twenty-four hours, and continue its daily use for several weeks. After a week's treatment, sometimes, the whole lesion is changed, indicating its nature.

The mouth must always be kept in as aseptic a condition as possible, by the use of antiseptic mouth-washes, such as thymol, boracic acid, chloral solutions; while the lesions may be touched twice a day with the following preparation:

℞.—Salol....................................	4 grams.
Liquid vaselin............................	30 grams.

M.—Sig. For external use.

As to the prophylactic measures to be taken they are of the greatest importance.

If the father or mother of a family be affected by this disease, he or she must be absolutely forbidden to kiss their children, or to allow any one to use anything that could have come in contact with the infected mouth. All dental instruments having come in contact with syphilitic patients must be placed in boiling water for at least half an hour before they are again used.

We must also be careful to protect our fingers with a napkin, moistened with a strong bichlorid of mercury solution, if we place it so as to guard the mouth against the slipping of an instrument.

Again, after an operation on a syphilitic patient, the hands must be washed for two minutes in a 1-1000 bichlorid solution.—A. C. Hugenschmidt, in *Cosmos.*

517. **To Make Twist Drills.**—Take a piece of fine piano wire, flatten by grinding or otherwise, about half an inch at one end. Do this without drawing the temper. Twist the flattened end to the left, while held in the vise, with a pair of pliers. You will have as nice a twist drill as you can wish for entering the smallest canals. If carefully made they can scarcely be broken while in use, and can be made as fine and small as desired.—D. V. Beacock, D.D.S., in *Ohio Dental Journal.*

518. **Treatment of Cystic Tumor.**—"A cystic tumor," says Professor Ingersoll, "should be erupted from its mucous contents by careful puncture at the lowest point. and then collapsed by pressure. This can usually be done by a pad of considerable size dipped in dry tannin and held firmly on the cyst by pressure of the lips or cheek. Mechanical treatment," he says, "should be confined to the external surface of the cyst, and consist of the use of stimulants and astringents."—ITEMS.

519. **Painless Clamp Attachment.**—Dr. Albin Lenhardtson, in the *Odontologisk Tidskrift*, recommends, to lessen the pain in adjusting the clamp, that its claws be covered with a piece of rubber skin of corresponding size. In this there is another advantage—the hold on the tooth being stronger on account of the elasticity of the rubber.—ITEMS.

520. **Coloring Wax.**—To stain beeswax a bright transparent color, melt the wax and add either armatto or turmeric. The addition of hard paraffin or spermaceti will harden it.—*Exchange.*

521. **Using Corundum Wheel about the Mouth.**—When a corundum wheel is used the particles are forced up under the gum; this is readily removed by a spraying apparatus. I use a spray more than I do a syringe. When cleaning the teeth of tartar some pieces will get loose and lodge under the gum: the spray effectually removes them. The same result follows the use of pumice refuse. The patients like it. Every dentist should get a spraying apparatus, and he will never be without it afterward.—R. Ottolengui, in *Ohio Dental Journal.*

522. **Hint on Using Disks.**—A celluloid disk placed at the back of any sandpaper disk stiffens it materially and is a great improvement. By holding a smooth burnisher on the smooth polished surface of the celluloid when polishing a gold filling, the disk can be bent and pressed in any

uneven surface without destroying it, thus avoiding the trouble and annoyance of changing so frequently. A celluloid disk can be placed between two sandpaper disks, back to back, and used to advantage.—D. V. Beacock, in ITEMS.

523. **Home-made Syringe.**—Get the rubber bulb from an ordinary drop tube, and fit a hypodermic syringe needle to it by wrapping a strip of dam on the hub of the needle, or by slipping several thicknesses of rubber tubing over the hub, so that by stretching the bulb over the hub with the clamp forceps it will fit entirely air-tight. It is a very serviceable device, and its many uses, such as syringing out canals, carrying medicaments to the teeth, etc., will be readily appreciated. By using a needle with a large bore, a cleanly oiler for the engine can be made.—Dr. H. R. Neeper.

524. **To Make Serviceable Drills.**—The most serviceable drills we have used are made by grinding fissure burs to a drill point of the desired shape. If they are not sufficiently hard, they can easily be tempered harder. They are especially useful in opening proximal cavities through the crown.—Dr. H. R. Neeper, in *Archives.*

525. **To Make Mouth Mirrors.**—Dr. Joseph E. Waitt, Boston, Mass., demonstrated a method of making mouth-mirrors by which the cost was reduced to a minimum. It consisted of making three dies, each with a round hole, the first for shaping and the others for finishing the backing for the mirror, which backing is made of German silver and stamped in the die by a steel mandrel. The mirrors are cut by a diamond glass-cutting machine, and cemented in the backing. This method is not patented, and was exhibited for the benefit of the profession.—*Trans. Mass. Dent. So.*

526. **Making Rubber Corundum Disks.**—Dr. George A. Maxfield, Holyoke, Mass., showed an ingenious way of making hard rubber corundum disks. The corundum grit is incorporated with the rubber by being passed through a

clothes-wringer (the quantity of the mineral used influencing the coarseness of the disk), and, after being cut to the required diameter by a mandrel for the purpose, they are vulcanized, being strung on a fine wire, the diameter of the engine mandrel, and separated from each other by a small circular piece of tin, the whole encased in a clamp to press and hold them together. A great many can be made at one time, and at a cost that is not worth mentioning.—*Trans. Mass. Dent. So.*

527. **To Avoid Infection.**—A physician recommends the placing in the mouth of a fragment of myrrh if one finds himself in an infected atmosphere; he has employed this means with happy results in several epidemics. He considers myrrh as a specific against infection. Physicians in the East use this means constantly in visiting patients.—*Ex.*

528. **To Clean Impression Trays.**—To clean and brighten impression trays place them in a vessel of water, to which has been added several tablespoonsful of "Pyle's Pearlin," and boil for a few minutes. While hot rub dry with a rough towel, and the trays will be as clean and bright as when new.—R. B. Foster, in ITEMS.

529. **Drip Tray for Lathes.**—Take a suitable piece of sheet zinc, make a small tray $6\frac{1}{2}$ inches long, $3\frac{1}{2}$ inches wide, and $\frac{1}{2}$ inch deep. When constructing, cut slanting in the corners of the zinc so that when the ends are bent up and soldered, they will lean foward about 20°. Now solder another piece of zinc across the tray about $\frac{1}{16}$ inch in front of and parallel to the posterior end. Take a piece of glass 7 inches long and of proper width to fit in the space between the double end, place in position and the tray is complete. The glass stands at an angle of 20° forward, so that when the tray is placed under the lathe-wheels, brushes, etc., the glass catches all of the drip, and yet does not shut off the light. The tray being of zinc does not rust out.—G. H. Wilson, in *Ohio Dental Journal.*

530. **Sterilization of Instruments and Cleansing Hands.**—Before beginning my work in the morning, I cleanse my nails, which are not allowed to become over a m.m. long, with a pen-knife, and then brush the hands, giving, of course, particular attention to the nails, for two minutes with a rather stiff brush, in a warm one to two per cent solution of lysol. Lysol is quite equal, if not slightly superior, to carbolic acid as an antiseptic, and is far less escharotic. It makes a soapy solution, and cleanses the hands beautifully even without soap, though I usually add soap as a matter of habit, as well as to make the cleansing doubly sure. The hands are then rinsed in hydrant water and thoroughly dried. The whole operation requires about four minutes. The hands are perfectly clean, but, of course, not absolutely free from germs. If the fingers are rough or cracked, or the nails long, double the time will be requisite to accomplish the same end. A slight odor of lysol clings to the fingers, but I have not found it disagreeable to the patients; on the contrary, they are glad to be reminded of the fact that the dentist takes proper care of his hands.

Between operations or consultations I wash the hands in soap water, brushing the nails and fingers from one-half a minute to a minute.

If, however, I have performed an operation on a filthy mouth, I return to the lysol solution, even increasing its strength according to indications to two and one-half, three, and even four per cent. I have found that a four or five per cent solution of carbolic acid, lysol, or trichlorphenol suffices to completely sterilize mechanically clean instruments in thirty minutes.

I keep two complete sets of instruments constantly in use, and as soon as I have finished operating for one patient, the whole set of instruments used is removed from the operating table and placed in the antiseptic solution, where it is allowed to remain while the other set is in use, or at least half an hour. Since about four weeks I have substituted lysol for carbolic acid. All instruments, including corundum disks, files and clamps, are subjected to this treat-

ment, whereas, those instruments which do not come in contact with the mucous membrane, or do not become soiled in the mouth (gold-pluggers, etc.), are only occasionally sterilized.

Mouth-mirrors require extra care, and must be carefully brushed before treating with the lysol solution, in order to remove small particles of infectious matter which may have inserted themselves between the glass and the fastening. I keep so many mirrors on hand that I do not require to use any one twice the same day. There is consequently no time lost between patients in cleansing mirrors.

To be able to place before every patient a glass which at least does not carry any germs from the mouth of a previous patient, I have provided as many glasses as I have patients in a day. These are all placed in a three per cent solution of lysol in the evening, and remain there for over twelve hours. They are then thoroughly rinsed in hydrant water.—W. D. Miller, in *Cosmos*.

531. **Suggestions on Storage Batteries.**—Locate your battery in a convenient and sufficient light, place so as to be easy of access and inspection. Look at it every day, and always before commencing to charge; see that the active material in the plates does not fall out and accumulate at the bottom of the cells so as to touch the plates; this would cause a short circuit and injure the plates, also diminish the power of cells. Use well-insulated copper wire of not less than No. 15 B & S gage, and No. 12, especially if the battery is located more than twelve or fifteen feet away from your appliances at the chair; the reason for this is that the quantity of your current should not be wasted in traversing an unnecessary length of wire, or the force or voltage of the current reduced by the high resistance of small wire external to the magnet coils of your motor or mallet; this loss is reduced toward the minimum just in proportion to the increase in size of the conducting wires leading from the battery to the motor.—W. W. Vance, in *Ex. Review*.

532. **Fusible Metals.**—

Lead.	Tin.	Bismuth	Melts at
1 part	1 part	1 part	250°
1 "	1 "	2 parts	2 0°
10 parts	16 parts	8 "	300°
16 "	14 "	8 "	280°
1 part	1 part	2 " add a little mercury.	112°

—J. E. Davis, in ITEMS.

533. **Watt's Metal for Cast Dentures.**—Tin, 40 dwt.; silver, 8 dwt.; bismuth, 16 grains.—J. E. Davis, in ITEMS.

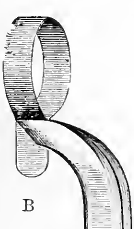
534. **Cause of Rubber Sore Mouth.**—Many reasons have been given for the disease called rubber disease. Some think that the vermilion in the plate is poisonous; some claim to prove that free mercury exists in the plate; some that the closeness of the fit causes a mechanical damming up of the follicles, and still others hold that it is none of these, but that the rubber being a non-conductor, the heat of the tissues is, so to speak, penned up, causing irritation.

I have but one opinion about it. It is that the porous condition of the rubber plate, for all, even the best of them, are variably less porous, affords a lodging-place for germs which irritate the tissues. It has been well said that probably no culture field is better fitted for the development of germs than a rubber plate; and of all the dirty things I have ever seen about the mouth an unclean rubber plate is the foulest. And it is remarkable with what perfect innocence the plate is handed to the dentist for repairs, with sufficient food clinging to it to afford materials for a naked-eyed analysis of what was had for breakfast and possibly for days past. I am sure that in some cases no part of the plate was in contact with the mucous membrane. Only food. Foul, fermenting, filthy, the whole thing is superlatively dirty. Even in the mouths of the most careful and fastidious patients the rubber plate cannot be kept clean. This condition of affairs is simply impossible with a gold plate. It is only possible where a surface, such as a rubber plate has, presents places for attachment for pasty food, mucus, etc.

I honestly think that the so-called rubber disease is a disease mainly of dirt, and that in so far as we get rid of the occasion the disease will vanish.—J. B. Hodgkin, in ITEMS.

535. **Light Yellow Tartar.**—Lightish yellow-black tartar is deposited at the gum margin, especially on the exterior next the cheeks. The tartar disposes to caries the points where it is deposited. It is not the tartar in the true acceptation of the word, but an infectious deposit, a fermentous medium, with permanent acid reaction (Viat). Green tartar which, contrary to the other kinds of tartar deposits, does not come from the salivary glands, but is produced by a parasite from the exterior—the Leptothrix buccalis.—Robin, in *Ohio Dental Journal.*

536. **Bands and Matrices.**—The simpliest and best matrix or band I know of is made from thin stencil cutters German silver, it can be obtained from dealers in stamp makers' supplies at a trifling cost. Cut from the sheet a piece the size and shape required, place it around the tooth, draw it tightly



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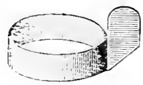

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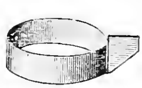

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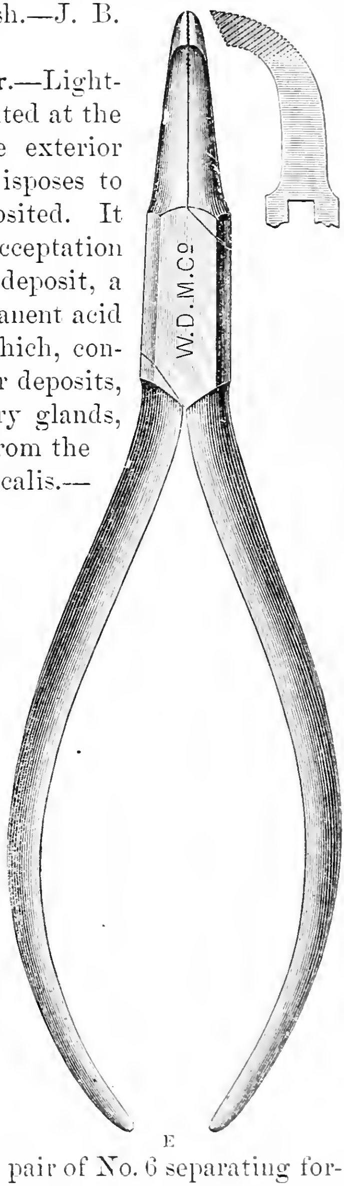

E

together, and hold firmly with a pair of No. 6 separating forceps, give it a bend as in Fig. C, remove the forceps and bend

again as in Fig. D. If it is necessary to leave the band on from one sitting to another, this projecting end (Fig. D) can be bent down on the band, and secured by a piece of floss silk tied around the tooth. The Wilmington Dental M'f'g Co. have recently introduced a pair of plier, invented by Dr. C. E. Esterly, designed especially for fastening matrix bands (see Figs. B and E), and they should be on every operator's table.—Wm. H. Steele.

537. **Origin of Pus.**—Inflammation is a disturbance of nutrition of a tissue, causing recurrence to the embryonal condition of the tissue involved.

The embryonal condition is established by the breaking up of the tissues in those medullary or indifferent corpuscles, which, at an early stage of normal development, have built up the tissue.

The medullary corpuscles arise, not only from the protoplasmic bodies of the tissue, the so-called cells, but also from the intercellular or basis substance, as these *shared* in the formation of the basis substance and must in its solution.

The medullary, or indifferent corpuscles, will represent a tissue so long as they remain interconnected and continuous. By a simple reappearance of basis substance, the most favorable termination is established—*resolution.*

If the inflammatory or medullary corpuscles have largely augmented, a number thereby remaining in original connection, the result will be productive—*hyperplasia.*

If the inflammatory corpuscles spring from previous "cells," basis substance and blood-vessels break asunder, become isolated and suspended in an albuminous liquid, and henceforth represent pus corpuscles.

Pus, therefore, is a destroyed tissue, broken up in its constituent elements, and as such, unfit for the production of new tissue; though the single pus corpuscles will remain alive and ameboid almost indefinitely, so long as they are sufficiently nourished.—Dr. W. H. Atkinson, in *Am. Den. Asso.*

538. **Combinations of Metals With Mercury.**—

Silver forms definite crystalline chemical compounds with mercury.

Tin unites with mercury in atomic proportions, forming a weak crystalling compound. (Kirk.)

Copper does not form definite compounds with mercury; but in the form of crystals is dissolved by it in varying proportions.

Gold is dissolved by mercury in all proportions; but does not form a definite atomic compound.

Zinc unites with mercury in atomic proportions.

Platinum only unites with mercury when reduced to a spongy condition.

Palladium.—The union with mercury is probably chemical.—T. E. Weeks, D.D.S.

539. **Affinity of Metals.**—

Mercury dissolves all metals but iron.

Silver has affinity for platinum.

Tin has affinity for gold and platinum.

Copper unites with zinc in all proportions; and in some proportions forms definite compounds.

Gold unites with silver in any proportion; and is rendered very brittle by the least trace of antimony, palladium or lead.

Zinc unites in all proportions with gold and tin; forms chemical compounds with platinum.

Platinum unites in definite proportions with silver and cadmium—T. E. Weeks, D.D.S.

540. **Disk Lubricator.**—Put a little petroleum jelly on the coarse polishing or dressing disks and they will not heat the tooth; but, will catch the particles of gold that would otherwise be lost. It softens the disks, making them more pliable for reaching out of way places; while they cut just as well as when dry.—A. Secor.

541. **Properties Imparted to Alloys by Metals.**—*Mercury*, being the controlling metal, imparts its spherical tendency to the amalgamated mass; specially in those alloys which are "solution," or "mechanical mixtures." This tendency is greater with those metals having a low fusing point, cooling slowly, and when amalgamated settling slowly, as tin; and less with those which melt at a higher temperature, cool quickly, and set quickly when amalgamated; as silver and copper,

Silver controls hardening or setting, because of its crystallin form and chemical affinity for mercury. It maintains the bulk integrity of the filling, and should be the largest component of an alloy. The silver sulphide formed by the action of sulphuretted hydrogen is supposed to have prophylactic action against decay.

Tin should be next in quantity, because it increases plasticity, prevents discoloration, and reduces conductivity. It also retards setting, reduces edge strength, and favors spheroiding; hence should not be used in such proportions as to become the controlling metal.

Copper diminishes shrinkage, hastens setting, and adds to the present and possibly to the permanent whiteness of the filling. It is also supposed to have greater compatibility with tooth substance and pulp tissue than other metals, and has been shown to have antiseptic action.

Gold lessens shrinkage, resists corrosion, increases edge strength, increases smoothness and plasticity, and hastens setting; all these to a greater degree in small quantities than any other metal, 5 per cent to 7 per cent being all that is advantageous to use.

Zinc controls shrinkage, hastens setting, improves color, and imparts a peculiar smoothness in mixing.

Platinum.—Authorities differ in regard to the influence of this metal; some claiming that it increases setting, hardness, stability, and improves color; while others contend that it imparts no properties which cannot be obtained by a judicious combination of other metals; which seems to be true.

Cadmium having been proven to be dangerous to pulp vitality, should never be used.

Antimony blackens so badly that the properties of controlling shrinkage and increasing plasticity which it imparts, do not seem to be of sufficient advantage to warrant its employment.

Palladium does not improve alloys, but amalgamated alone with mercury, furnishes an amalgam which does not shrink or discolor, but its expense hinders its universal use.

It is an open question, whether freedom from discoloration is a desirable attribute; it is certainly true that cavity surfaces under leaky fillings, which have become coated with a black oxid or sulphide, have remained free from decay for years. We hold that unsightliness is the principal objection, unless such chemical compounds are formed as to cause wasting of the filling or be detrimental to the health of the patient.—T. E. Weeks, D.D.S.

542. **To Prevent Blood Adhering to Cuspidor.**—After cleaning and drying cuspidor, I wipe with an oiled rag, this leaves an oiled surface. Blood and saliva immediately descend, leaving no trace.—G. Charles Bowles, in ITEMS.

543. **Cheap Rubber.**—This is a question that has attracted a great deal of attention of late, from the fact that certain manufacturers and dealers have given out claims; that they offer a low price rubber that is as good as any in the market. This statement is misleading, for the reason that all cheap rubbers contain a large amount of adulteration with heavy matter, than does the better grades. The cheap adulterants employed in the transformation of pure Para gum, two grades of rubber can be made; which vary in value, directly in proportion to the amount of foreign matter introduced in the fibers of the gum; it will be readily seen, that if the manufacturer of the rubber, makes his charges in proportion to the cost of manufacturing his product, there is proximately no difference in the price of the rubber; for the reason that the better grade will cover

more space, and consequently make a large number of plates. For example, take a square foot of the best rubber that can be had, and an equal area of the poorest grade and weigh them; it will be found that the cheap grade will weigh from fifteen to twenty per cent more than the better grade; which, figured out, will probably be about the difference in price. And this is not all, while poor rubber costs as much for the surface covered as does the higher grades; it is much more liable to break the blocks and teeth in vulcanizing, will not take or retain as fine a polish, is heavier, does not make as strong a plate, is far more injurious, and less durable. —Wm. H. Steele, *Extract of Paper read at Iowa State Dental Society, Omaha*, 1894.

544. **Composition of Human Teeth.**

	Cementum.	Dentine.	Enamel.
Organic	29.27	28.70	3.59
Inorganic	70.73	71.30	96.41

The inorganic portion divides up as follows:

	Dentine.	Enamel.
Phos. cal	66.72	89.82
Carbon. cal	3.36	4.37
Phos. Mag	1.08	1.34
Salts, etc	.83	.88
Organic	28.01	3.59
	100.00	100.00

The totals of the first table give 238.44 parts of inorganic, as against 61.56 organic—a proportion of four of inorganic to one of organic in these portions of the tooth. The composition of the enamel, the most important part of the tooth, because most exposed, and least likely to repair, shows a very great preponderence of the inorganic: 96.41 inorganic to 3.59 organic; which last, some writers even question as organized organic matter.—*Van Bibra's Dental Register*.

545. **Treatment in Odontiasis**—It is during the eruption of the temporary teeth one observes troubles of a diverse nature, such as salivation, redness (blushing), heat, and swell-

ing of the gums, aphthe, ulcerations, slight cough, diarrhea, convulsions, fever with agitation, etc. Then interfere, and make, if there is reason, an opening for the eruption of the teeth. When there is fever, give a solution of bi-carbonate of potash, combined with a little citric acid, to which add some drops of tincture of henbane, in case of agitation.—Dr. Macario, in *Nice Medical.*

546. **Solubility in Metals.**—

Mercury.—Soluble in dilute nitric, and hot sulfuric acid.

Silver—In nitric, and hot, strong sulfuric acid.

Copper—In hot mineral acids; slowly attacked in air and moisture by vegetable acids, alkalies, and saline solutions.

Gold—In aqua regia; not affected by single acids or alkalies.

Zinc—In dilute acids, and solutions of the alkaline hydrates.

Platinum is dissolved slowly in aqua regia.—T. E. Weeks, D.D.S.

547. **Oxidation of Metals.**—

Mercury—Not affected by air or moisture.

Silver—Not acted on by air or water; but readily by sulfuretted hydrogen.

Tin oxidizes very slowly.

Copper—In moist air becomes coated with a green carbonate; is tarnished by sulfuretted hydrogen.

Gold—Unaffected by air, water or sulfur.

Zinc tarnishes slowly; is coated with carbonate in moist air.

Platinum—Unaffected by air or water.

Cadmium tarnishes slowly in air and sulfuretted hydrogen.

Antimony oxidizes badly when amalgamated.

Palladium does not oxidize easily, but is acted on by iodin.—T. E. Weeks, D.D.S.

548. **Screw *vs.* Rubber for Regulating.**—I had one of those very trying cases this summer where a bicuspid erupted

without the arch. There was room enough for its reduction by a slight change of the other teeth, and after a space was made it was merely required to have an instrument to bring it in place. Nature may have accomplished this unassisted, but it had remained in that crowded position for a year and a half, and, therefore, it seemed advisable to force it in position. I made a plate, putting two hooks on it, and threw an elastic band around the tooth, and brought it in position in one week. Now, what was the harm in taking my elastic band, instead of working with a screw? Every one who makes a practice of using springs or screws instead of rubber will admit, when he looks over his cases, that it takes, it may be, five months to do that which can be done by continuous pressure in half the time. What may be lost by possible danger to the tooth by moving it rapidly is more than counterbalanced by the comfort of the patient, and in causing the appliance to be worn not more than half the usual time. I think the nerves of the patient are to be considered as much as anything else. Where you can get two molars with anything like a knuckle on them, make a rubber wedge and fit that clasp to go to that point and keep them wedged till the appliance is placed, and as soon as it is pressed down you have a point that prevents that clasp from riding up. You can always force it up, because half-round wire is always wedged-shaped, and it won't slip.—Dr. Ottolengui, in ITEMS.

549. **Sunlight Injures Instruments.**—

Fine edged tools assume a blue color and lose all temper if exposed for any considerable length of time to the light of the sun, either in summer or winter.—*Exchange.*

550. **Hard Rubber Corundum Disks.**—The most difficult part is the combining the caoutchouc and corundum or emery. Taking a sheet of black rubber, such as we use for making plates, it is softened over a water bath, not by dipping in hot water. When softened, one side is covered with the emery (No. 90 if for cutting, No. 100 or 120 for polish-

ing), then folded over on itself and passed through a pair of rollers [a common clothes-wringer answers the purpose well], and this repeated till a proper quantity of emery is worked in the rubber. Use four parts of emery or corundum to one part of rubber, by weight. The combination of the rubber and emery is not a chemical, but simply a mechanical one.

After the corundum and rubber are properly combined, laying the rubber on a glass slab, and with a roller made by filling a bottle with boiling water, roll it to the thickness necessary for disks and wheels,* and with the same cutters used for cutting sandpaper disks, cut out the disks or wheels.

From scraps from the tin shop may be cut disks of tin plate somewhat larger, and stringing the corundum-rubber disks and tin plates alternately on a wire the size of the screw of the mandrel used in the engine, clamp them together. For this purpose use two square pieces of brass plate about one-eighth inch in thickness, with four holes in each for as many bolts, and screw them only tight enough to make a pressure. They are now ready for the vulcanizer, and are vulcanized the same as a dental plate. As soon as removed from the vulcanizer, drawing out the wire, as it is more easily removed when hot, cool as rapidly as you wish, and when cold there is no trouble in separating the disks.

If hubs on the disks are desired, take a number of pieces of brass plate, say about three-sixteenths inch thick, drill the hole for the wire, and countersink each side the size you wish the hub. By countersinking both sides you will need only half as many brass pieces, as the tin plate can be used on the flat sides of the disks. To prevent them adhering to the brass, place a piece of tin-foil between the disk and brass. After the disks and wheels are vulcanized, true them up by placing them on the mandrel in the engine, and while running it, warm the edge of the disk in a flame of gas or alcohol till it softens, then run it against a piece of glass or porcelain. To make the stub-wheels roll thicker

* To prevent corundum-rubber adhering to the roller, dust a little of the corundum or emery over the surface.

than the disks. Disks and wheels of different thickness can be vulcanized at the same time, but to vulcanize disks or wheels of different diameters it will be necessary to use heavier plates between them. Large wheels for laboratory use can be made in the same way as small ones.

Disks and wheels for polishing fillings and teeth can also be made from vulcanite or soft rubber, and as the rubber for dental plates becomes hard rubber when vulcanized, it will be necessary to have a special rubber, one containing less sulfur, for this purpose, as the amount of sulfur added to the caoutchouc, and the length of time vulcanized, constitute the difference after vulcanization, between hard rubber and vulcanite or soft rubber.—George A. Maxfield, D.D.S., in *Dental Office and Laboratory.*

551. **To Prevent Sulfurous Smell in Vulcanizing.**—Half grain of coffee, either steeped or fresh, in the vulcanizer, destroys the sulfurous smell so disagreeable, if there is a slight leak where the operating-room and laboratory communicate. Coffee grounds burned in the laboratory are a good deodorent in case of necessity.—*Off. and Lab.*

552. **Home-made Canal Drier.**—Take a piece of small insulated copper electric bell wire, and dress own to a taper see cut (1). Get a piece of large copper rod, and turn down to shape of 2, bore a hole through, and *hard solder* to place; for handles use the ordinary ten-cent broach holders.—Wm. H. Steele.

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